NETWORK WORLD
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Firm to help users build on NetView

By Paul Desmond
Senior Editor

RALEIGH, N.C. — A new company formed by veteran IBM employees is preparing to launch management products and services to help users get the most out of IBM's NetView and related management tools.

The company, NetTech, Inc., plans to announce early next year a tool for centralized local-area network management dubbed LView, another for monitoring network elements and a third that shows historical data about those components.

All of the firm's products use rule-based automation facilities and simple console presentation formats to help users centrally manage large Systems Network Architecture and other networks.

NetTech, based here, is already delivering pilot versions of these products to numerous customers. The tools do not replace existing management products; they complement NetView and its associated automation facilities, as well as other IBM and third-party element management systems, such as the IBM LAN Network Manager.

"Many users have NetView, but most of them have not ex-

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Remedy cofounders Larry Garlick and David Mahler (l. to r.) discuss the strategy behind their innovative software development firm.

Software company offers net management remedy

By Bob Brown
Senior Editor

BOSTON — Some of the network industry's leading players last week rallied around a fledgling software development company that's trying to change the way vendors approach multivendor network management.

Remedy Corp., a Sunnyvale, Calif., firm founded last year by two network industry veterans, unveiled here a trouble-ticket system that is the first in a new class of generic net management applications to be offered by the company.

The applications will be designed to handle core management functions common to most devices and will be able to run on the most popular integrated network management systems. They will work hand in hand with customized net management tools provided by vendors for specific network gear such as routers and hubs.

The company's strategy is to encourage network equipment vendors to focus on developing management capabilities unique to their products and leave the development of foundation applications and management platforms to third-party software developers and systems vendors.

"What's happening here represents the next generation of solutions for the network and systems management problem,"

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Wellfleet offers up gigabit-speed router

High packet processing rate, redundant parts enable router to support strategic applications.

By Maureen Molloy
Staff Writer

BEDFORD, Mass. — Wellfleet Communications, Inc. today will unveil a next-generation multiprotocol router that greatly surpasses the throughput of rival devices and is equipped with redundant components to ensure network availability.

The 1G bit/sec router, called the Backbone Node, addresses the performance and reliability criticisms that have kept users from deploying router-based internetworks to support so-called mission-critical applications, analysts said.

The router will enable users to accommodate emerging technologies such as 100M bit/sec Fiber Distributed Data Interface local-area networks and high-speed wide-area network services such as Switched Multimegabit Data Service and Synchronous Optical Network.

"We've heard many users grumble about bottlenecks in their routers and that routers represent a single point of failure," said Marvin Chartoff, a senior manager at Ernst & Young, a consultancy in Vienna, Va. "Users are developing corporate utility networks and need a high-performance box that can handle all the LAN-to-LAN traffic traversing the backbone. And providing fault tolerance to that backbone is critical."

The Backbone Node will sup-

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INSIDE

SynOptics' Bill Lanfri talks about FDDI debuts, page 4.

BT preps to unveil global network unit

By Barton Crockett
Senior Editor

ATLANTA — British Telecommunications PLC (BT) plans to announce next week the formation of a new business unit that will provide end-to-end global network and outsourcing services to multinational companies.

The unit, located here, will use its 12-node international private net to provide private-line services as well as complete international networks. The unit will also offer to manage customers' existing global networks, according to officials familiar with the operation.

Earlier press reports stated that BT would launch the venture in conjunction with other international carriers and would sign on IBM as its first customer. But

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NETLINE

PORTABLE FRAME RELAY software to ease development of interfaces for network, computing gear. Page 4.

CLIENT/SERVER GROUP aims to educate industry, spur deployment of technology. Page 4.

TWO LAWMAKERS push FCC, local carriers on quality, reliability of public net. Page 6.

SUN MICROSYSTEMS unit offers software for client/server applications. Page 6.

NOVELL, MICROSOFT TOOL kits help 3Com customers migrate to new LAN operating systems. Page 65.

AT&T CHANGES TACK on support of legislation barring RBHCs from information services. Page 65.

NEWSPAPER

FEATURE

Bypass companies win respect as local carriers

By Daniel Briere
Contributing Editor

Perhaps the term "bypass carrier" was meaningful at one time, but now it's unfair and misleading. Today, these companies are challenging traditional local exchange carriers on a number of fronts.

Besides offering access services, these competitive local carriers provide private lines, network management, local-area interconnection and some switched services at prices that are often equal to or better than those offered by the established local carriers. They're also aggressively installing sophisticated switching equipment, fiber-optic transmission facilities and other innovative technologies that will pave the way for advanced services.

These competitive local carriers are mostly lo-

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Cabletron will unveil FDDI interface modules for hubs

Integrated product line will bridge Ethernet, FDDI traffic to backbone, support SNMP management.

By Maureen Molloy
Staff Writer

ROCHESTER, N.H. — Cabletron Systems, Inc. last week said it will introduce a suite of integrated Fiber Distributed Data Interface products at the INTEROP 91 Conference and Exhibition next month.

Cabletron plans to introduce four additional FDDI modules for its Multi Media Access Center (MMAC) intelligent hub, along with four FDDI network interface cards. The company currently has a single FDDI product called the Ethernet-to-FDDI bridging module, a translation bridging module that links Ethernets to an FDDI backbone.

The new FDDI Media Interface Modules (MIM) for the hub include the FDMMIM, a shared bridge that is linked to both the FDDI and Ethernet backplanes in the MMAC, allowing it to bridge both Ethernet and FDDI traffic to the FDDI backbone. The module will also offer both local and remote Simple Network Management Protocol management.

Also to be introduced is the FDMMIM-04, which serves as an Ethernet-to-FDDI bridge and a four-port FDDI concentrator that allows four file servers or workstations to be directly connected to the hub via FDDI links.

Cabletron will also introduce

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Northern Telecom to roll out ACD net mgmt. tools

Will let users manage up to 10 remote ACDs.

By Bob Wallace
Senior Editor

SAN DIEGO — Northern Telecom, Inc. is expected to announce later this month the Meridian Call Center, a family of products that will enable users to more flexibly manage automatic call distributor (ACD) networks.

The products will include a centralized ACD network administration system, a software tool kit to build voice response applications for ACDs, and a board-level version of an ACD management product for the Meridian 1 PBX that was shown for the first time at a Canadian conference on call centers last week (see "Northern Telecom offers Meridian 1 ACD upgrade," page 13).

"I don't think any PBX/ACD vendor has as complete an approach to call center management as Northern [Telecom] has here," said Ian Angus, president of Angus TeleManagement Group, Inc., a Pickering, Ontario, consultancy. "They offer it all."

A Northern Telecom source said the company will announce the Meridian Call Center products at the Tele-Communications Association, Inc.'s (TCA) annual conference here this month.

The core component of the Meridian Call Center family is the Network Administration Center (NAC), the first Northern Tele-

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BT, DEC to link OSI-based net management systems

By Paul Desmond
Senior Editor

SAN JOSE, Calif. — British Telecommunications PLC (BT) and Digital Equipment Corp. last week announced plans to build an OSI-based link between their integrated net management systems.

The link will enable BT's Concert Integrated Management System and DEC's DEC Management Control Center (DECmcc) to exchange alert and control data, allowing users to employ either Open Systems Interconnection-based system to manage the other. Users also could deploy the systems as peers, with each managing a portion of the net.

The BT-DEC announcement continues a trend of alliances between major integrated management system vendors. AT&T and IBM have announced plans to develop a similar link between AT&T's Accumaster Integrator and IBM's NetView ("IBM, AT&T join hands in net management," *NW*, April 1). And BT announced earlier this year that it had entered into a feasibility study with IBM on forging a link between its Concert and NetView.

"Network management has

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Briefs

Vendor bonding. A coalition of vendors last week announced the formation of a group that will develop standards to promote the interoperability of customer premises equipment that enable users to establish high-speed links as needed. The Nx56/64 devices, including data service unit/channel service units and T-1 multiplexers, let users access a pool of bandwidth on demand by dialing up multiple switched 56K or 64K bit/sec lines. The devices synchronize the switched calls so the result appears to be a contiguous high-speed digital pipe.

The charter members of the group, dubbed the Bandwidth On Demand Interoperability Group (BONDING), are Digital Access Corp., in Reston, Va.; General DataComm, Inc., in Middlebury, Conn.; Larse Corp., in Santa Clara, Calif.; Newbridge Networks, Inc., in Reston, Va.; Promptus Communications, Inc., in Portsmouth, R.I.; and Teleos Communications, Inc., in Eatontown, N.J. BONDING plans to hold a meeting at the Tele-Communications Association, Inc. show this month in San Diego.

FCC orders 800 number portability. The Federal Communications Commission last week set the clock ticking on an 18-month deadline by which the regional Bell holding companies and GTE Telephone Operations must implement data base and signaling technology necessary to make 800 numbers portable.

Currently, 800 numbers are assigned to specific carriers so customers who choose to switch carriers must give up their 800 number. The order issued last week sets out performance standards that local carriers must meet as they complete the installation of new data base technology. The order also laid out how the local carriers will be allowed to apportion the costs of deploying data base and Common Channel Signaling System 7 technology.

AT&T requests more lines to Russia. AT&T last week asked the Federal Communications Commission to temporarily let it cut over 42 more telephone circuits on the Soviet Union's Intersputnik satellite system, besides the 24 circuits it and IDB Communications Group were granted last month. AT&T says it needs as many as 2,300 circuits into the Soviet Union to meet skyrocketing demand but can only put up 91 because the U.S. government is limiting Intersputnik access and because capacity on the International Telecommunications Satellite Organization net and other cable facilities is scarce. AT&T said that 95% of all call attempts to the Soviet Union are failing because of inadequate capacity.

BT firms up frame relay plans. BT North America, Inc. is planning to announce commercial availability of its public frame relay service on Sept. 24 — three months later than originally promised when the service was introduced in January. BT North America will also disclose how much it will charge for public frame relay service and have beta customers on hand to describe how they are using the service.

COS to air OSI migration strategies. At the quarterly Strategy Forum of the McLean, Va.-based Corporation for Open Systems International (COS) held last week, members voted to initiate a series of presentations and debates with users and vendors on the subject of network migration plans to Open Systems Interconnection. Karen Higginbottom, manager for standards at Apple Computer, Inc., said COS will hold the first of the OSI-transition presentations during the next Strategy Forum in early December. However, COS — which is planning to focus the talks on a handful of industries, including banking, manufacturing and defense — will also conduct the sessions in a public setting during the next year.

Senate postpones FTS 2000 hearing. The Senate Government Affairs Committee last week postponed a hearing on Federal Telecommunications System (FTS) 2000 because the General Services Administration missed its deadline for preparing the FTS 2000 recompetition document. The document is supposed to detail the guidelines for evaluating the performance of AT&T and US Sprint Communications Co., the two carriers providing FTS 2000, during the FTS 2000 "recompetition" in December 1992. At that time, the vendors will have a chance to win up to 40% of the other's FTS 2000 business. The Senate, intending to examine the recompetition rules closely, plans to reschedule the hearing when GSA completes the FTS 2000 document.

CONTENTS

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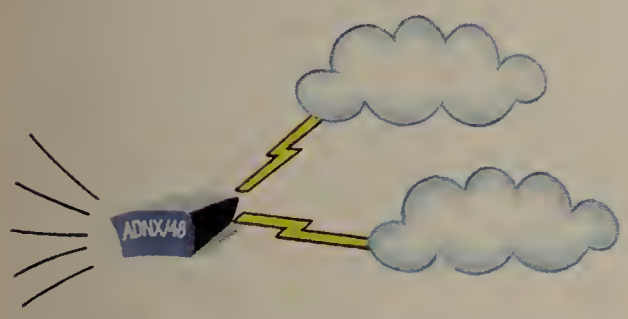

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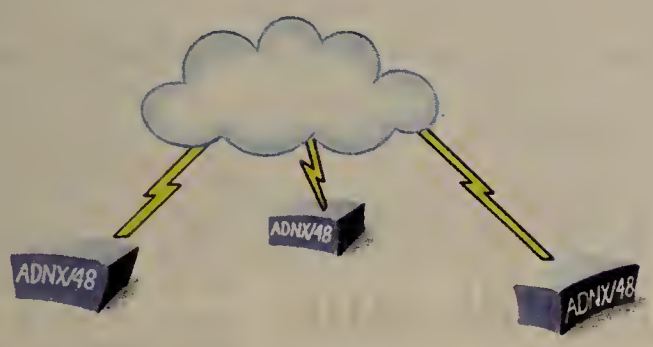

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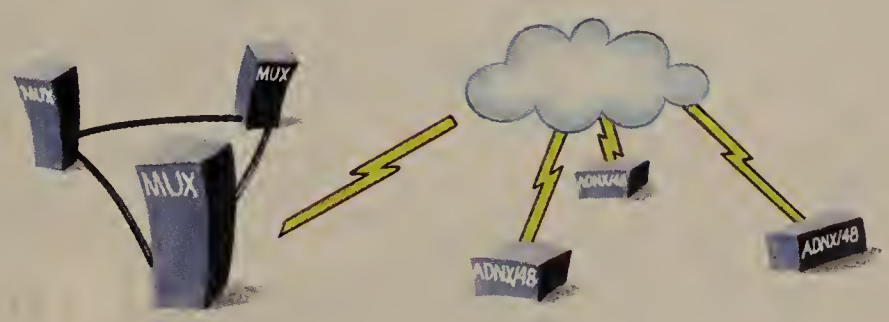

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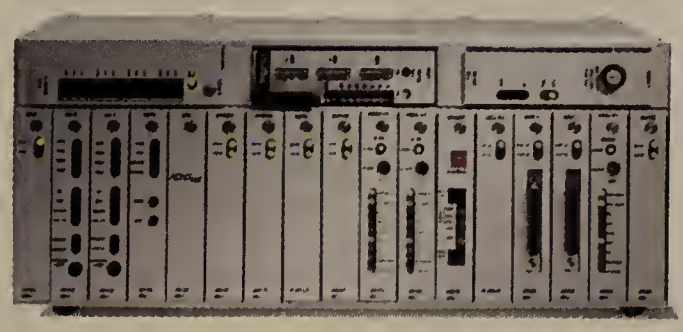

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SynOptics touts FDDI products' affordability

By Bob Brown
Senior Editor

SANTA CLARA, Calif. — As expected, SynOptics Communications, Inc. last week unveiled a portfolio of aggressively priced Fiber Distributed Data Interface products that may give the firm an edge over rival hub makers.

The products will enable users to interconnect multiple local-area networks over FDDI backbones and provide the capacity to support high-bandwidth desktop applications.

SynOptics announced several FDDI modules for its LattisNet System 3000 intelligent wiring hub, two new FDDI-based work group concentrators and FDDI support for its existing integrated network management software ("SynOptics to unveil FDDI components," *NW*, Aug. 19).

The products, which support FDDI over either fiber-optic or shielded twisted-pair cabling, are currently in beta test and are scheduled for availability next month.

The high end of SynOptics' FDDI product line includes a series of modules that reside in the company's System 3000 wiring hub, which can be upgraded to support an FDDI backplane.

SynOptics' Model 3902 FDDI STP Host Module supports the connection of as many as four FDDI single-attached workstations over shielded twisted-pair wiring, providing FDDI support to desktop workstations and linking them to an FDDI backbone attached to the hub. The module will cost $4,995.

The Model 3904 FDDI Fiber Host Module supports the connection of as many as four FDDI single-attached workstations over fiber cabling. It will be priced at $7,495.

As many as 10 modules of either type can reside in a System 3000 hub to support as many as 40 FDDI stations.

SynOptics will also offer the Model 3910S-04 FDDI Network Management Module, which acts as a LAN management agent for the hub.

The product monitors and controls the FDDI modules and stations attached to the hub, relaying data back to an integrated network management console.

The management module supports a unique three media access control architecture that gives users the ability to manage the 100M bit/sec, dual counter-rotating FDDI rings on a backbone, as well as a separate 100M bit/sec data path linking workstations or servers to the hub, said Nick Schommer, a product marketing manager at SynOptics.

The management module, which takes up two slots, will be priced at $14,995.

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Portable software package speeds delivery of frame relay interfaces

By Bob Wallace
Senior Editor

SAN JOSE, Calif. — LIR Corp. is expected to soon announce a portable software package that will enable network and computer equipment makers to quickly deploy frame relay interfaces for their products.

LIR said the software, which will be announced and available later this month, is designed to speed the delivery of frame relay support.

"Vendors take anywhere from eight to 12 months to write, test and debug [frame relay] software," said LIR President John Scandalios. "With our software, companies that want into the frame relay market don't have to start from scratch."

Developers can use the software to build frame relay interfaces for use with private frame relay networks or public frame relay services from such providers as BT North America, Inc., CompuServe, Inc., Sprint Data Group and WilTel.

LIR's software is written in the C programming language and can be easily ported to most computing and network devices, Scandalios said. LIR is currently negotiating to sell the software to two communications products vendors and

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Group forms to educate industry on client/server

By Bob Brown
Senior Editor

TRUMBULL, Conn. — A group of users, vendors and consultants have formed an organization to promote development and implementation of client/server applications, according to the group's acting chairman.

The Client/Server Industry Forum (the name may soon be changed for legal reasons) met here recently to discuss organizational issues and will have its first formal meeting in Chicago on Nov. 3 during the Database World trade show.

The group's mission is to educate the industry about client/server technology, said Arun Gupta, acting chairman of the forum and chairman and chief executive officer of DataEase International, Inc., a data base software manufacturer. Among other things, the group will develop a working definition of client/server computing — one that users, vendors and consultants can agree upon and implement.

"Computing is moving down from mainframes and minicomputers to the network, and client/server is the architecture that's enabling this," Gupta said. "It will take a concerted effort by all parties involved to make client/server happen."

The initial meeting of the forum brought together representatives from nine organizations including user firms such as The Dun & Bradstreet Corp., ven-

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IBM spells out new roles for its AS/400 mini

By Paul Desmond
Senior Editor

NEW YORK — IBM last week announced its intention to enhance the operating system of the Application System/400 to enable it to function in multivendor networks and to run IEEE Portable Operating System Interface X- (POSIX) and CICS-compliant applications.

The enhancements, which may not be unveiled for two years, include support for portions of the Open Software Foundation, Inc.'s (OSF) Distributed Computing Environment (DCE), which would enable the AS/400 to interoperate with other DCE-compliant machines.

IBM made the architectural statement of direction here while announcing a new low-end, $12,000 model of the AS/400 and 17 new Plug'N'Go Applications intended to make the minicomputer easier to use.

Analysts were impressed by IBM's intention to support DCE and said it is indicative of things to come.

"DCE will bring a lot of openness, and that's very important," said Atul Kapoor, vice-president of the consultancy Kaptronix, Inc. in Haworth, N.J. "You're going to see DCE-based [software] on the mainframe, on the PC, on the mid-range and on the RS/6000," which is IBM's RISC-based family of workstations and servers.

John Freeburger, an IBM systems planner for openness, said OS/400 — the operating system of the minicomputer — will support DCE's remote procedure call (RPC), directory, security and time services.

The OSF's RPC will enable AS/400 users to access applications and data from remote DCE-compatible machines as if they were local.

The DCE directory provides a standardized, X.500-based mechanism for naming network devices and applications, Freeburger said. And the security features provide a standardized way to authorize user access to applications in a multivendor network.

DCE time services will enable the AS/400 to be configured as a time server, providing a master clock upon which other DCE-compatible computers synchronize.

IBM would not say exactly when it will make DCE support and the other OS/400 enhancements available. Freeburger said the AS/400 group has historically delivered on statements of direction within two years, but because this announcement was classified as an architectural statement of direction, it could be longer.

The same time frame applies to the set of Application Program Interfaces (API) IBM intends to offer that will enable OS/400 to support CICS applications, said

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Reps push for probe of carriers' net service quality

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Two key members of Congress have asked the nine largest local carriers for details about their service quality standards and requested cooperation from FCC Chairman Alfred Sikes on a congressional investigation into network service quality.

Reps. Edward Markey (D-Mass.) and John Bryant (D-Texas) made the requests late last month in a letter sent to Sikes, the seven regional Bell holding companies, GTE Telephone Operations and United Telecommunications, Inc.

The congressmen said their concerns about the public network were prompted by a number of developments, including recent network problems stemming from a Common Channel Signaling System 7 software glitch that knocked out service for millions of customers in July.

"Recent network outages, the prospect for substantial diversification by telephone companies into new lines of business and the adoption of incentive-based regulation by the FCC and many states highlight the need for enhanced attention to service quality by the industry, its regulators and Congress," Markey and Bryant stated in the letter to the carriers.

In addition, the congressmen said the House Subcommittee on Telecommunications and Fi-

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SunSoft airs pack for net applications

By Caryn Gillooly
Senior Editor

MOUNTAIN VIEW, Calif. — SunSoft, Inc. last week announced software that will enable users to develop Unix-based client/server applications that run across disparate systems on a TCP/IP network.

The software, called Solaris, could help usher in a new suite of business applications that draw on multitasking and other inherent Unix features to provide users with distributed processing across a multivendor network.

In tandem with the announcement, a handful of the industry's largest hardware and software companies, including Ashton-Tate Corp., Intel Corp., Lotus Development Corp., Novell, Inc., Oracle Corp., Sybase, Inc. and WordPerfect Corp., said they would support Solaris.

SunSoft is a subsidiary of Sun Microsystems, Inc., which is based here.

Solaris is a set of software modules that provide users with a base operating system and network technologies on top of which developers can build distributed applications.

Solaris consists of five basic components: Sun's SunOS 5.0 workstation operating system, which is based on Unix System V Release 4; its Open Network Computing (ONC) networking environment, which includes the Transmission Control Protocol/Internet Protocol, Network File System (NFS) and Sun's own remote procedure call technology, called ONC RPC; the vendor's OpenLook graphical user interface; its OpenWindows application development tool; and the Sun ToolTalk distributed application development tool.

These components can be used to develop applications that run on Intel 80386- and 80486-based personal computers in addition to Sun's scalable processor architecture (SPARC)-based workstations and servers.

"Solaris is a complete distributed environment for desktop [personal computers, workstations] and servers," said Steve Martino, director of product mar-

(continued on page 68)

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

The market for regional Bell holding company-based voice messaging services is expected to explode from a $160.3 million business in 1990 to a $3.1 billion market in 1996, according to a recent Frost & Sullivan International report titled "The Regional Bell Operating Companies' Marketing Strategies."

People & Positions

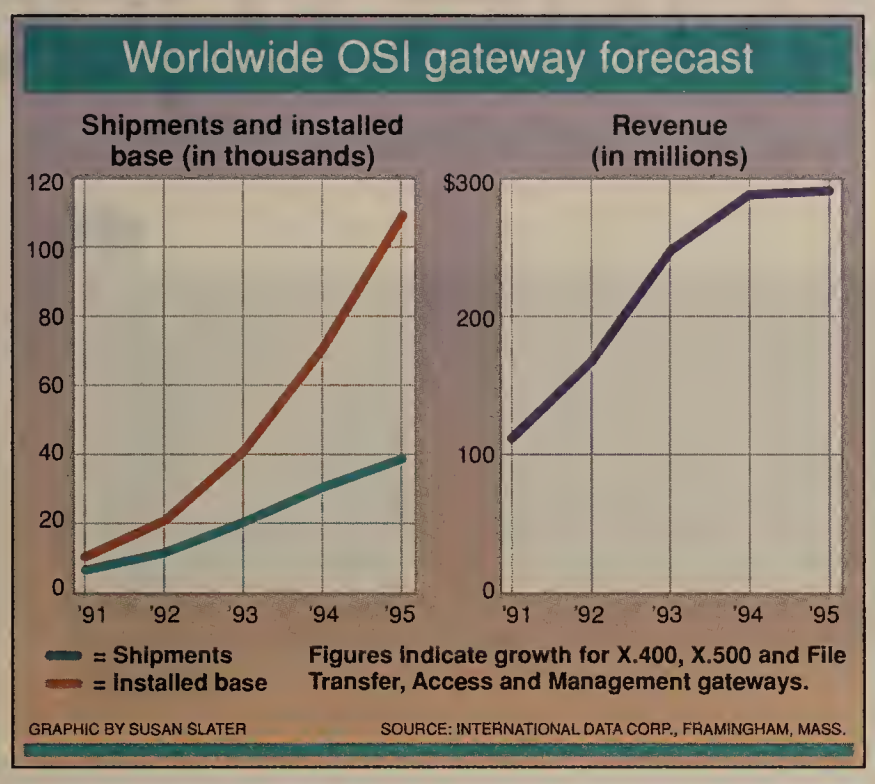
Colin McMillan, assistant secretary of defense, last week announced that Army Maj. Gen. **Edward Baldwin** has been named vice-chairman of the newly formed **Computer Aided-Acquisition and Logistics Support (CALS) Council.**

Baldwin, who assumes the post this week, will be responsible for coordinating CALS activities for the Army, Navy and Air Force as well as other military departments.

Baldwin, formerly the deputy director of command, control, communications and computer support for the Department of Defense, will report to McMillan, the CALS Council chairman.

The council represents a reorganization of the Defense Department's CALS program. Michael McGrath was recently ousted as director of the CALS office. The defense agency expects to make other council appointments soon.

Cable & Wireless Communications, Inc. last week announced that **Joseph Basile Jr.** has been named senior vice-president of system services. He will be responsible for the company's operational systems and manufacturing programs, including service installation and provisioning, facilities management, technical operations and maintenance of the company's fiber-optic net.



OSF signs on notable users, vendors to member ranks

Membership hits 300 after addition of 10 firms.

By Bob Brown
Senior Editor

CAMBRIDGE, Mass. — The Open Software Foundation (OSF) last week added 10 new members, including American Express Travel Related Services Co., Banyan Systems, Inc. and Tandem Computers, Inc., bringing its total membership to 300 organizations.

The addition of these members precedes the OSF's expected announcement in two weeks of which vendors' technology it has selected for the Distributed Management Environment, the OSF's multivendor network and systems management architecture. The OSF also plans to announce the general availability of its Distributed Computing Environment at a press conference on Sept. 17.

> The OSF plans to announce the general availability of its DCE on Sept. 17.
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The OSF is a nonprofit organization that develops open systems software products based on technology submissions from numerous vendors.

In addition to the three mentioned above, other new members include Barclays Bank PLC, BBN Software Products Corp., Lawrence Livermore National Laboratory, NEC Computer Systems, Ltd., Sigma System, Inc., TRW, Inc. and Unilever PLC/NV.

David Mahoney, president and chief executive officer at Banyan, said the Westborough, Mass., maker of the VINES network operating system and OSF "share similar visions of open systems."

He said Banyan will be able to contribute its knowledge and technology in the area of distributed computing to future OSF products and projects.

INDUSTRY BRIEFS

Proteon implements DEC specs. Proteon, Inc. last week said it has implemented Digital Equipment Corp. specifications into its own token-ring products to provide interoperability between DECnet Phase IV nodes on token-ring networks and DECnet Ethernets.

Proteon has implemented DEC's DECnet Phase IV 802.5 Data Link Specification, which defines how DECnet Phase IV nodes run over token-ring nets. By implementing the specifications in its products, Proteon token-ring nets can interface with DECnet Ethernet networks. DECnet Phase IV specifications for Ethernet and X.25 have already been made publicly available, but no complete DECnet data link definition for token-ring has been offered publicly by DEC.

Newbridge posts financial gains. Newbridge Networks Corp. in Kanata, Ontario, parent company of Newbridge Networks, Inc. in Herndon, Va., last week reported revenue for its first fiscal 1992 quarter ended Aug. 3 of $41.1 million (Canadian), up 8% over the $38.1 million revenue (Canadian) posted in the first quarter of fiscal 1991.

Newbridge posted net earnings of $1.1 million (Canadian) for the first quarter of 1992 vs. a net loss of $180,000 (Canadian) in the first quarter of fiscal 1991.

Terence Matthews, Newbridge's chairman, said the financial results show that work force reductions and other cost cutting

(continued on page 12)

Users register X.500 names with ANSI

Firms register to secure preferred organization names that will be basis for X.500 net directories.

By Ellen Messmer
Washington Correspondent

NEW YORK — Some of the country's largest network users have registered with the ANSI network naming service in an effort to ensure they lock up their preferred organizational names that will be the basis for public and private X.500 network directories.

Hughes Aircraft Co., Rockwell International Corp., TRW, Inc. and Xerox Corp. are among the first twenty users to apply to ANSI for an official organization network name.

These names will be used to identify companies and their employees listed in public net providers' electronic white- and yellow-page directory listings. The organization names will also come into play when routing electronic mail messages across a wide-area network because public network carriers' directories will be able to match a recipient's E-mail address in a directory to the name identifier on a message.

The North American Directory Forum (NADF), the group of 13 value-added network providers preparing the future rollout of a public X.500 directory, recognizes ANSI as the only national registration service for names.

NADF officials said that, in addition to ANSI organization names, it will recognize company names registered at state and local levels when a firm is incorporated.

Users who do not wish to pay ANSI a registration fee may take this route, but they will not be listed in national directories.

Gary Rowe, core services director at AT&T's EasyLink Services and chairman for the services committee at NADF, said only an ANSI national company listing will allow a user to easily locate a company through the X.500 distributed directory without having to know the exact city or state. Rowe urged companies to register their names with ANSI.

The national registration of organization names is part of a worldwide effort to establish national registries of unique organization names in order to develop a global directory based on X.500 services.

ANSI, as the official representative to the International Standards Organization (ISO), is the U.S. registration service for names that must correspond to the ISO standard.

Although striving to ensure that each organization name is unique, ANSI will not guarantee uniqueness of the names it registers because of legal liabilities over potential naming conflicts.

Beth Sommerville, registration coordinator at ANSI, emphasized that a rigorous review process is in place that should ensure no name is ever duplicated.

She said the fee for registering an organization name is $1,500 and the application review process takes about four months. The first applications are expected to be approved in October.

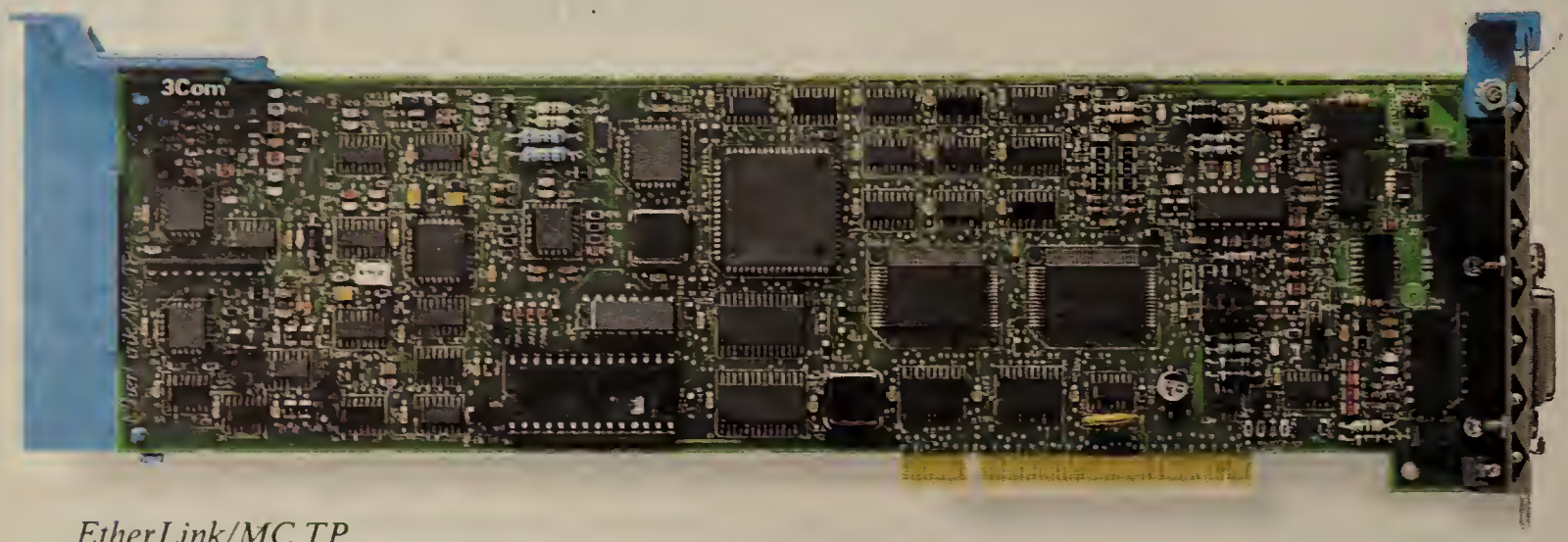
Ted Sickles, manager of data networks at Rockwell International, said that applying early for a name will ensure that Rockwell gets the name it wants — in this case, Rockwell.

Sickles noted that the company, having recently changed its name from Rok to Rockwell on the Internet registry, is now undergoing the long and painful renaming process of changing business cards and domain-name servers to reflect the update.

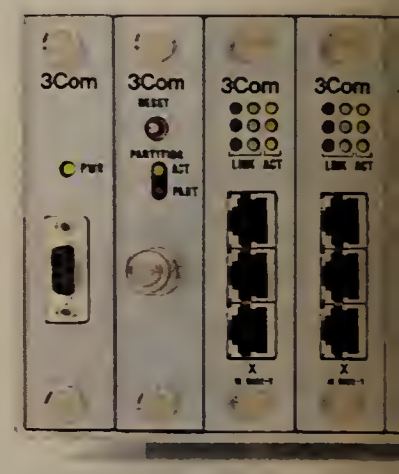
"We don't want to be renam-

(continued on page 12)

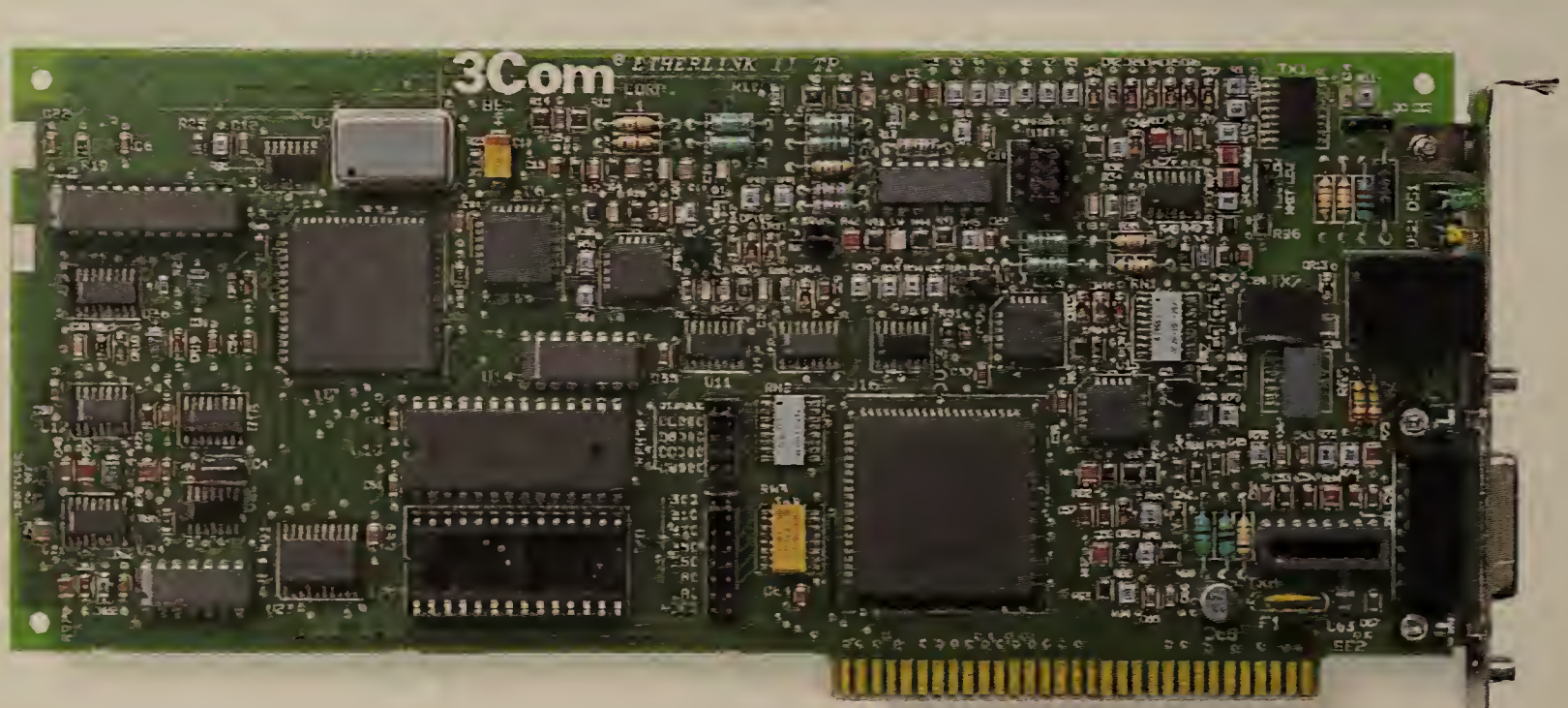
Every twisted question



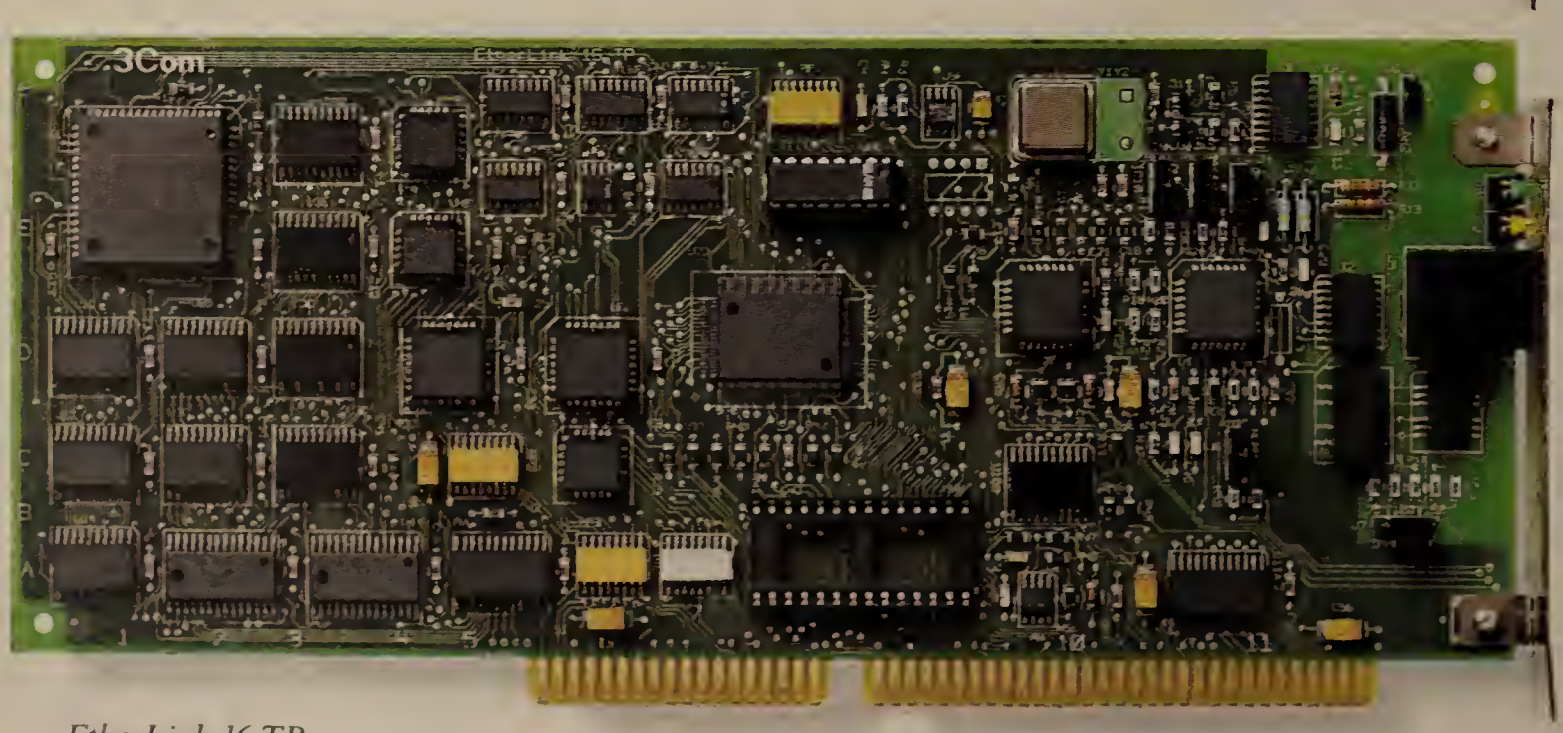
EtherLink/MC TP



MultiConnect



EtherLink II TP



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Users register X.500 names with ANSI

continued from page 9

ing things," he said. "The naming is a terribly time-consuming and expensive process."

But Sickles noted that getting the ANSI organization name is part of the preparation at Rockwell for an eventual move to the X.400 Message Handling System and X.500 Directory Services. The company already has two X.400 gateways between two partners in the aerospace industry where the name could be used.

In an X.500 directory, a private management domain (PRMD), as opposed to an administrative management domain for public service providers, represents the listing of a corporate private E-mail network.

At Xerox, which has applied to ANSI to use Xerox as an organization name, the name will be used as the company's X.400 PRMD name, said John Stidd, manager of standards development and planning.

Allan Crosswell, manager of computing systems in the Academic Information Systems Group at New York's Columbia University, another early applicant, said he approached ANSI to snag the name Columbia University on "the off-chance we might do some OSI networking."

> "People are getting into this mind-set of being nickled and dimed to do OSI networking," Crosswell said.
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Having to pay for organization names has rankled some, who point out that there is no charge for Internet name registration.

"People are getting into this mind-set of being nickled and dimed to do OSI networking," Crosswell said.

However, he conceded that federal sponsorship of the Internet brings about its own problems. "We're spoiled with having the government pay for everything," he said.

ANSI is urging those interested in obtaining more information about the organization name registration service to fax questions and requests for applications to (212) 398-0023.

Industry Briefs

continued from page 9

measures taken by Newbridge in fiscal 1991 are starting to pay off.

The company is optimistic about its future financials, given a wave of new products, including upgrades to its high-end MainStreet multiplexers and new transmission access offerings. These products are expected to be announced and demonstrated during the current quarter, he added.

Racal by any other name. Racal Electronics PLC recently announced the unification of 15 of its data communications subsidiaries worldwide under the name Racal-Datacom, Inc., which brings together companies employing 4,500 people in 10 countries.

In the U.S., Racal-Datacom will encompass Racal-Milgo, Racal InterLan, Inc., Racal-Vadic and Racal-Quanta, Inc.

Tim Holley, chairman of the newly named firm, said that although Racal's many subsidiaries have worked together in the past, the new name provides users with "an identifiable, integrated organization geared to serving the needs of multinational users as well as its individual customers in single locations."

EDS to buy integrator. Electronic Data Systems Corp. (EDS) recently announced plans to acquire McDonnell Douglas Corp.'s McDonnell Douglas Systems Integration Co. (MDSI) for an undisclosed price. The two companies said the transaction will include the domestic operations of MDSI and certain computer-aided design, manufacturing and engineering research and distribution activities of MDSI and McDonnell Douglas Information Systems International. An EDS spokesman said the sale will likely take several weeks to complete.

Stockholders to meet. Borland International, Inc. last week said it and Ashton-Tate Corp. have set Sept. 24 as the date for the meetings at which both companies' stockholders will consider Borland's acquisition of Ashton-Tate. Borland announced plans to buy Ashton-Tate, a rival data base software maker, in July for about $439 million ("Borland buys Ashton-Tate to lead PC data base charge," *NW*, July 15).

Borland officials said they anticipate that the acquisition will be finalized as soon as possible after the requisite stockholder approvals have been obtained and all other conditions of the acquisition have been satisfied or waived.

Worth Noting

MCI Communications Corp. last week joined "Operation Roadblock," the anti-drug abuse campaign waged by the American Truck Stop Foundation. MCI will donate 1% of operator services revenue generated from pay phones at participating National Association of Truck Stop Operators establishments.

Carrier Watch

Pacific Bell recently announced plans to launch small-scale trials in order to test the economic feasibility of using more fiber-optic facilities in the local loop.

Pacific Bell said it will conduct two tests of "fiber to the curb" technology, in which fiber-optic lines will be run from central office switches to optical/electrical converters placed at intervals along streets or on telephone poles. Each converter will support either four or eight copper lines to individual homes or businesses.

The tests are being conducted in anticipation of the day when it will be feasible to replace traditional copper lines with fiber.

"While the cost of copper cables have steadily risen, the cost of fiber-optic technology is decreasing," said Chuck Johnston, vice-president and general manager of Pacific Bell in Los Angeles. "We envision that the cost of fiber technology will soon become less expensive than copper. These tests will prepare us for that time."

The first California trial just began in La Crescenta, while the second is scheduled for next fall in Hawthorne.

Pacific Bell said that in ad-

(continued on page 14)

Northern Telecom offers Meridian 1 ACD upgrade

Unix-based version features twice the capacity.

By Bob Wallace
Senior Editor

TORONTO — Northern Telecom, Inc. last week introduced a new Meridian 1 PBX automatic call distibutor (ACD) reporting package that can collect statistics from twice as many agents as the vendor's previous offering.

The new package, dubbed Meridian MAX, is housed in the Meridian 1 PBX's intelligent peripheral equipment shelf and replaces the older ACD MAX software, which runs on an adjunct Hewlett-Packard Co. processor. Northern Telecom will continue to make ACD MAX for an unspecified period.

Northern Telecom has also cut the price of the ACD offering by 20% because the system uses one of the private branch exchange's own distributed processors and the switch's own power supply and memory.

"Meridian MAX will be less expensive, less costly to repair and, since it is contained in a stackable Meridian 1 module, doesn't take up the floor space the older system required," said a Northern Telecom spokeswoman.

Meridian MAX is based on Unix, while ACD MAX uses Xenix. The newer package displays real-time performance statistics on agents and the status of call queues using color and graphics.

Meridian MAX and ACD MAX support common features and management reports, but Northern Telecom is targeting enhancements to the Meridian MAX, which the company calls its ACD management package of the future. Northern Telecom will first enhance the package early next year to collect statistics from 1,000 Meridian 1 ACD agents.

Meridian MAX displays real-time performance statistics on agents.

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ACD MAX supports 500 ACD agents. A single-module, eight-port Meridian MAX supports 150 agent positions, 3,000 peak-hour calls, six supervisor terminals and six printers. A single-module 16-port package supports the

(continued on page 18)

WASHINGTON UPDATE

BY ANITA TAFF

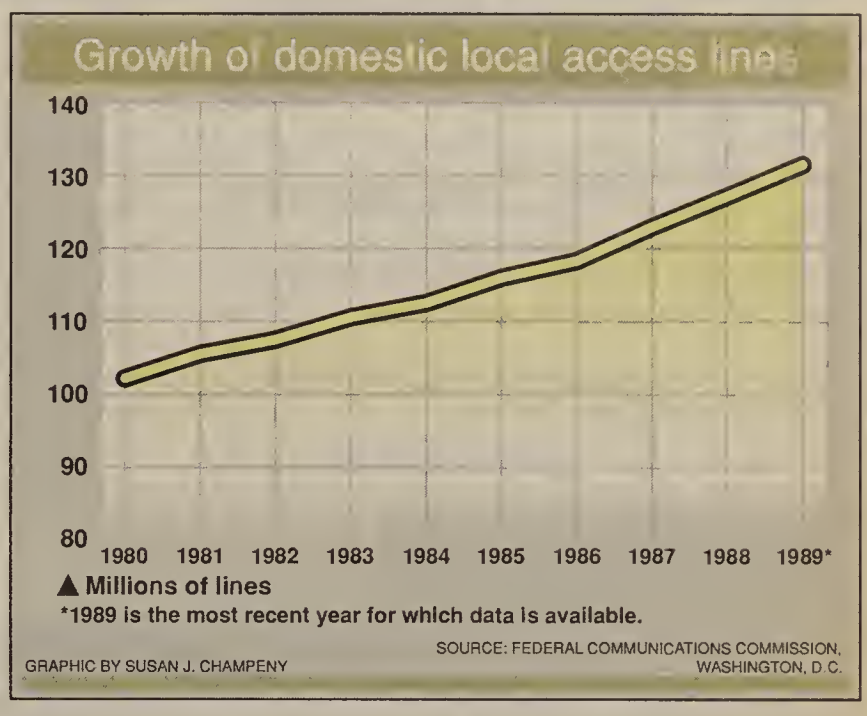
Tariff 12 deals take effect despite ban. The Federal Communications Commission last week allowed two new AT&T Tariff 12 deals containing 800 service to take effect even though the agency ruled in early August that AT&T would be banned from offering 800 services in custom network deals.

Options 91 and 92 had been filed and were pending FCC review when the decision was made on Aug. 1. The deals were reportedly designed for FMC Corp., based in Dallas, and Hewlett-Packard Co., based in Palo Alto, Calif., respectively. FCC staffers said a special exception would be made for all Tariff 12 deals filed before Aug. 1.

The FCC has not yet issued a decision on Option 90, which was created for an unnamed customer. That deal was also pending at the time the agency issued its decision, but AT&T has since asked to alter the filing. FCC staffers have said the commission will not allow any major changes to Tariff 12 deals, so it is unclear whether Option 90 can be modified.

The fate of 15 new deals AT&T filed after the Aug. 1 ruling is also in question. AT&T officials say that until they see the full text of the FCC's decision, expected this month, they are free to file new deals calling for provision of toll-free 800 service as part of the packaged service deals.

In August, the FCC ruled that AT&T would be barred from offering 800 service in Tariff 12 deals because it holds about 80% of the 800 market and customers cannot switch carriers and retain their 800 numbers.



MCI fuels FTS 2000 furor with GTS deals

Sale of service to agencies raises questions on mandatory use requirements of giant fed network.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Six months after introducing a tariff to undercut Federal Telecommunications System (FTS) 2000 prices, MCI Communications Corp. claims it is making inroads with government users. But the carrier's marketing activities are fueling a continuing controversy over the huge government net.

In February, MCI made a splash when it unveiled its Government Telecommunications Service (GTS) tariff, which it claimed offered prices 40% lower than those for services in the FTS 2000 contract. GTS includes virtual network, 800, private-line, switched T-1, fractional T-1 and videoconferencing services.

At the time of the announcement, MCI claimed that AT&T and US Sprint Communications Co. were overcharging federal agencies and using excess profits wrung from FTS 2000 to discount services for large corporate customers.

Some critics questioned whether the carrier was engaging in cheap theatrics to embarrass rival carriers and officials of the General Services Administration, which oversees FTS 2000.

MCI contends that it wants to expose serious problems in the way the GSA is handling FTS 2000. The carrier, which says it is trying to keep rival carriers from turning the FTS 2000 contract into an illicit cash cow, questioned why it should be shut out from government business when it can offer lower rates.

But almost everything about MCI's GTS tariff is wrapped in controversy. AT&T and US Sprint, the current FTS 2000 carriers, claim that MCI's services are not less expensive in all instances and that MCI does not offer network management and other administrative features comparable to those provided by FTS 2000.

What's more, introduction of the GTS tariff has raised the issue of whether MCI can legally take users away from the government

MCI wants to expose serious problems in the way the GSA is handling FTS 2000.

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network. Virtually all federal users are required by law to buy service from FTS 2000.

MCI officials say the carrier has already sold GTS services to a number of federal users. MCI is carrying traffic for the U.S. House of Representatives and the U.S. Senate, which are exempt from FTS 2000, and has also made inroads with quasi-federal agencies in the financial area, according to Jerry Edgerton, vice-president of government systems at MCI. He refused to be more specific about the number or identity of GTS customers.

Edgerton said MCI fears that if it publicizes its GTS customers, the GSA might try to force those

(continued on page 18)

New FCC ruling on ONA services raises worries over higher rates

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Users, enhanced service providers and regulators recently said the FCC's plans for tariffing and regulating rates for Open Network Architecture (ONA) services are seriously flawed and are urging the agency to reopen the matter.

If the Federal Communications Commission proceeds with the rules it approved in June, costs for some network services purchased under ONA will rise dramatically, many parties said in comments and petitions for reconsideration filed with the agency recently.

They said the new FCC rules will force users and enhanced service providers to purchase services from higher priced federal, rather than state, tariffs and will give carriers too much pricing flexibility, which could enable them to set rates in a discriminatory manner.

ONA is a key component of the FCC's Third Computer Inquiry, which drew up a road map for entry of the regional Bell holding companies into enhanced services. ONA requires the RBHCs to give end users and rival enhanced service providers access to network elements on the same terms and conditions as the RBHCs themselves. It also requires that network services be sold on an unbundled basis.

Although most observers applaud ONA as necessary to further competition in the industry, critics such as the Ad Hoc Telecommunications Users Committee say the FCC's new rules will serve as structural impediment to ONA.

For example, enhanced service providers are currently allowed to purchase access services through state tariffs, even for interstate offerings, due to a special exemption enacted by the FCC. The agency left that exemption in place but said any customer that purchases ONA access services in that manner will not be allowed to purchase advanced ONA network features, which will be tariffed at the federal level.

"ESPs face the choice of their services being uneconomical or becoming technologically disadvantaged," members of the Ad Hoc Committee stated in their filing at the FCC. The user group estimates that if customers purchase ONA access services through federal tariffs in order to receive advanced features, their access costs would skyrocket by 300% to 400%.

The other major concern expressed by critics in this round of filings is that the FCC's new rules give the local carriers too much pricing flexibility for ONA services. The agency has proposed initially requiring the local carriers to show that pricing for new ONA services are based on cost. But in 1993, the services will be moved under price cap regulation.

The Public Service Commission (PSC) for the District of Columbia argued that ONA services should be kept separate from price caps indefinitely. Under price caps, the carriers can change prices significantly for individual services as long as the overall price changes for a group of services do not exceed 5% annually.

The PSC said this flexibility raises "a possibility that local exchange carriers will price the [advanced features] they use for their own enhanced services well below the prices charged for [features] used by their competitors."

The General Services Administration is also worried about pricing for restructured ONA services since no cost-support data will be required for revamped services.

"[ONA] rates could, in fact, become blatantly discriminatory in short order, absent additional safeguards," the GSA said.

Other parties that filed documents last week included AT&T, BT North America, Inc., CompuServe, Inc., MCI Communications Corp., Prodigy Services, Inc. and US Sprint Communications Co.

Carrier Watch

continued from page 13

dition to potential cost savings, fiber-optic technology promises advantages in signal quality, capacity and reliability. The objectives of the tests are to evaluate the technology's performance, reliability and maintenance requirements.

The La Crescenta test involves 295 residences. According to Johnston, the mountainous La Crescenta terrain will provide a good laboratory to evaluate the durability of the technology since that area receives above average rainfall and is populated by squirrels, which gnaw on cables.

Pacific Bell will utilize Raynet Corp.'s Loop Optical Carrier-2 system in the La Crescenta test. An equipment manufacturer for the Hawthorne project has not been selected. The Hawthorne site is a new residential development that will include 394 condominiums and town houses in addition to a few small businesses.

Also to be evaluated in the tests will be the potential means of providing the electrical power needed to drive the bell, lights and other features on remote telephone sets. Fiber-optic cable cannot carry power, so in both La Crescenta and Hawthorne, power will be provided from remote power pedestals equipped with batteries.

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MCI fuels FTS 2000 furor with GTS deals

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users onto FTS 2000. He said the new customers have all purchased GTS service legally through one of the three primary ways federal agencies can buy service outside FTS 2000. An agency can be exempt, such as the legislature, or considered a nonmandatory FTS 2000 user.

According to Michael Corrigan, assistant commissioner for telecommunications services at the GSA, there are a handful of federal agencies that are not required to purchase service from FTS 2000. They include the U.S. Postal Service, the Central Intelligence Agency as well as parts of the Department of Defense.

Government agencies are also allowed to purchase service outside FTS 2000 if the particular offering they need is not provided under the contract. For example, FTS 2000 currently does not include international or T-3 services.

MCI claims that federal agencies can justify buying service from other carriers if the offering is too expensive under FTS 2000. Edgerton admits there is a "raging debate" over this tactic but said MCI has sold GTS service to some FTS 2000 users on the basis of cost and more may follow.

"There are agencies that are going forward now and asking for exemptions because the [FTS 2000] prices are just too high," Edgerton said.

However, Corrigan said cost is not a legitimate reason for federal agencies to purchase service outside FTS 2000. "If an agency is buying a service from MCI that is available on FTS 2000, then they're not in compliance with the federal law," Corrigan said. "If we found out about it, we'd tell them to stop."

Corrigan said he is unaware of any agency on the mandatory use list that is purchasing service outside FTS 2000 due to cost. An agency would probably have to apply for a waiver to do that.

"I don't believe we've ever exempted an agency [from FTS 2000] on the basis of cost," he said. "We've never given such a waiver, and I can think of no reason that we would give such a waiver."

Edgerton said the GSA has already discontinued a number of MCI contracts that were signed before FTS 2000 and moved those customers over to that net.

"What [the GSA] is trying to do is gobble up those pieces that have been competed previously and revert those back to AT&T [under FTS 2000] at prices that are higher," Edgerton said.

MCI customers scheduled to be moved to FTS 2000 this year are the Social Security Administration and the Pentagon. "The prices that are charged on that [MCI] contract are such that the Pentagon will spend, by converting to FTS 2000, about $3 million more a year," Edgerton said.

A spokeswoman for the Pentagon confirmed that the GSA has told the agency to move to FTS 2000 rather than renew its lower cost contract with MCI for an additional year. "Our figures indicate that it will cost about 20% more to buy service at the FTS price, so we would be talking about somewhere in the vicinity of $1 million more per year," the spokeswoman said.

Edgerton said the GSA is moving more customers onto FTS 2000 to solve a political problem. Congress has conducted several hearings into the GSA's handling of FTS 2000, and AT&T has been highly critical of the agency for failing to uphold promises it said were made in the contract.

One key promise is that AT&T would receive 60% of the revenue from FTS 2000. The only way the GSA could beef up AT&T's revenue split was to begin moving users who were outside FTS 2000 onto the government net, Edgerton claims.

Even agencies that have doubts about whether FTS 2000 services can satisfy their needs are being moved over to the government network, Edgerton said. He pointed to recent announcements that the GSA is planning to require the Federal Aviation Administration, the National Aeronautics and Space Administration and five government-run utilities to purchase service from FTS 2000.

Previously, these agencies had waivers exempting them from the government network. The users claim their needs cannot be satisfied with FTS 2000 services ("GSA forces FAA, NASA and other agencies to FTS 2000," *NW,* June 17).

Northern Telecom offers ACD upgrade

continued from page 13

same number of agents and calls but can handle 10 supervisor terminals and eight printers. The dual-module 48-port Meridian MAX supports 500 ACD agents, 10,000 peak-hour calls, 32 supervisor terminals and eight printers.

Each Meridian 1 intelligent peripheral module can support two one-module Meridian MAX packages or one dual-module system. Users can add modules to house additional Meridian MAX packages.

Meridian MAX generates 16 standard reports as well as a number of other customized reports. One chronicles call duration and the number of calls handled by queue or agent. Another lists calls handled by each agent and the amount of time it takes to accomplish work after a call. A third report shows how long it takes for agents to answer calls, while a fourth lists how long callers waited before abandoning their calls.

Meridian MAX should be available in the fourth quarter. Northern Telecom declined to give pricing for the package.

DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

"Hybrid packet/circuit networks are now becoming a standard way of doing things. The whole key is to match the technology to the application to get the job done."

Jim Michaels
Assistant vice-president
of network planning
Newbridge Networks, Inc.
Herndon, Va.

Data Packets

GE Information Services (GEIS) of Rockville, Md., last week announced a new version of its personal computer-based software that helps users prepare and exchange documents via electronic data interchange.

GEIS' EDI*PC System Version 7 software features a new user interface that uses icons to simulate a users' desktop, thereby simplifying the storage, retrieval and management of EDI documents. The new version also includes an automatic installation feature that GEIS said tests and loads the software automatically in less than 30 minutes.

EDI*PC System Version 7 also supports an unattended session feature that lets users send or receive documents and generate acknowledgement messages at regular intervals or specified times.

Version 7 is available now at no charge to existing EDI*PC System users. For new users, the software starts at $1,450.

AT&T Paradyne of Largo, Fla., recently announced the Acculink 731, a data service unit/channel service unit (DSU/CSU) that can be upgraded to a low-end T-1 multiplexer.

The Acculink 731 supports the attachment of as many as four synchronous devices, using V.35 or RS-422 interfaces, to a T-1 or fractional T-1 line.

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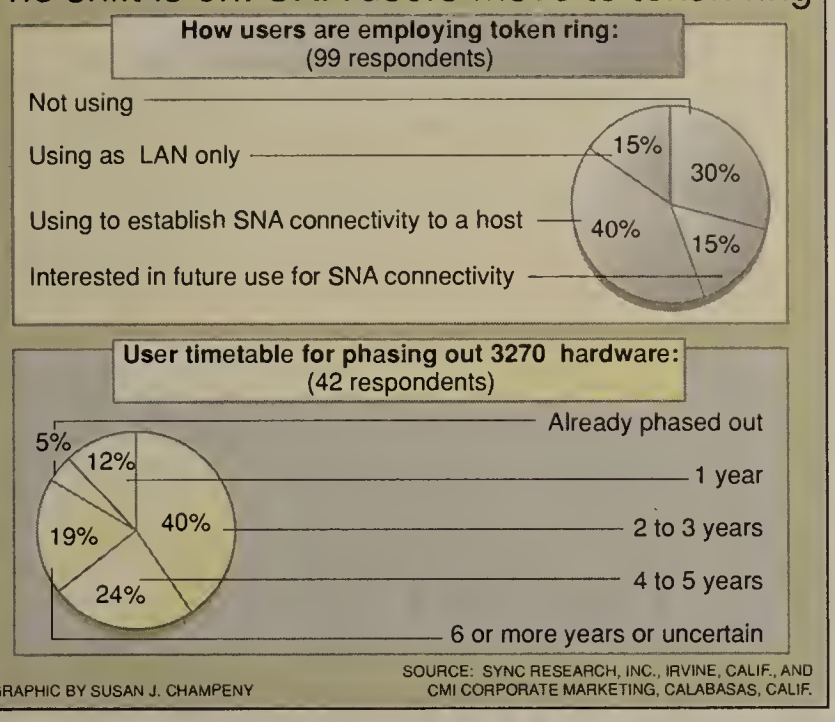
The shift is on: SNA users move to token ring



GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: SYNC RESEARCH, INC., IRVINE, CALIF., AND CMI CORPORATE MARKETING, CALABASAS, CALIF.

Survey says SNA users oust 3270 nets for token rings

LAN benefits outweigh those of older host nets.

By Paul Desmond
Senior Editor

IRVINE, Calif. — More than half of all users with large SNA networks are moving to token-ring local-area networks as the preferred means of attaching terminals and personal computers to their host-based nets, according to a recent survey.

Reasons cited for the shift from 3270 equipment to token rings include expanded use of intelligent workstations, faster response times and a perception that token-ring LANs represent the technology of the future.

The report is the result of a market research survey conducted by CMI Corporate Marketing of Calabasas, Calif., for Sync Research, Inc., located here. It is based on interviews with 120 net managers, MIS executives and chief financial officers in Systems Network Architecture shops.

Sync Research makes the SNA Network Access Controller/Token-Ring Converter (SNAC/TRC), a device that lets users attach cluster controllers to token-ring LANs.

Of the SNA users interviewed, 55% said they either currently use token-ring LANs for SNA connectivity or have plans to do so (see graphic, this page). Nearly 75% of those users plan to expand their use of token rings.

The move to token ring requires users to upgrade or replace older 3270 cluster controllers in order to make them token-ring-compatible. About 45% of users plan to accomplish that by outfitting existing controllers with token-ring adapter cards. Another 15% are buying new token-ring compatible controllers.

More than half of the users said they were phasing out 3270 equipment, warehousing it or continuing to use it in limited areas with no growth potential. Over 80% of those planning to phase out 3270 equipment intend to do so within five years.

Of those phasing out 3270 equipment, 41% said it was due to expanded use of intelligent workstations and personal computers on users' desktops. Over 25% cited token ring as the technology of the future, and nearly 18% said their 3270 hardware was no longer supported by IBM. Another 18% said 3270 terminals are incapable of key functions, and 15% said token ring provides faster host response times than Synchronous Data Link Control lines. (Some users supplied more than one answer to the question.)

More than half the users, 57%, said they currently support both token-ring LANs and older SDLC-based networks, but only 8% of those said they were working to eliminate that situation. That question was of specific relevance to Sync Research because its SNAC/TRC connects as many as 32 controllers to a token ring, thus eliminating SDLC lines.

More than half the users said they support both token-ring LANs and SDLC-based nets.

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User with gov't ties forced to back GOSIP

Allied-Signal unit agrees to conduct OSI testing, migrate net to OSI to keep Energy Dept. in its fold.

By Ellen Messmer
Washington Correspondent

KANSAS CITY, Mo. — A unit of Allied-Signal, Inc. here is proof that as federal agencies move to comply with the Government Open Systems Interconnection Profile (GOSIP) mandate, private sector suppliers are being forced along for the ride to open systems.

Network engineers at Allied-Signal Aerospace Co., a longtime contractor for the Department of Energy for nuclear weapons electronics, said the firm had little experience with OSI before the GOSIP purchasing mandate took effect in August 1990.

But in an effort to maintain close ties to a major customer, the Allied-Signal division agreed to assist the Energy Department in setting up GOSIP-compliant networks as well as taking the first steps to implement OSI within its own organization.

"The mandate for GOSIP is causing lots of pain and anguish here," said Brad Gault, a communications systems engineer at Allied-Signal Aerospace.

The company, which until recently had utilized a strictly proprietary network environment, has launched a number of GOSIP test bed projects in conjunction with the Energy Department. In addition, it will cut over its first X.400 gateway next month so it can link to Energy Department facilities and design laboratories within the agency's nuclear weapons complex.

"The mandate for GOSIP is causing lots of pain and anguish here," Gault said.

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"We were probably like most corporations, caught up in the proprietary solutions of everyday," said David Robinson, network development supervisor at the Kansas City Division of Allied-Signal Aerospace. "My folks have

(continued on page 20)

VSAT lets users build T-1 net with mesh topology

By Paul Desmond
Senior Editor

SANTA MARIA, Calif. — Spar Communications Group recently introduced a new low-end model to its line of satellite terminals that lets users build mesh topology VSAT networks capable of transmitting data at T-1 speeds.

The company's new VSATPlus is a very small aperture terminal with intelligence typically found only in earth station hubs.

"We take the network control, which is usually in the hub, and distribute that intelligence to each of the individual nodes," said Merritt Doyle, director of U.S. sales and marketing for Spar Communications here. The company is a unit of Spar Aerospace, Ltd., a Canadian manufacturer of satellite and ground communications systems.

Typically, VSAT networks are configured in a star topology with the hub site at the center of the star. The distributed intelligence in Spar Communications' satellite terminals obviates the need for a hub and lets any site communicate directly to any other, Doyle said. That means users can build networks in a mesh or any other topology.

The configuration also reduces the number of satellite hops required when one site needs to communicate to another site other than the hub.

VSATPlus is a smaller version of the company's Spar Business Terminal and the ruggedized Spar Field Terminal, each of which supports as many as 50 T-1s.

VSATPlus supports four T-1s, enabling it to handle applications such as local-area network interconnection, image transfer and videoconferencing. Although some VSATs support data rates of 128K bit/sec, the technology is typically used to support speeds of about 9.6K bit/sec, Doyle said.

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User with gov't ties forced to back GOSIP

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very much grown up with OSI in the course of the last year."

Last October, the Kansas City Division and the Energy Department signed an agreement under which Allied-Signal agreed to test on behalf of the department a wide range of OSI products, such as File Transfer, Access and Management (FTAM) and X.400 Message Handling System full-layer and gateway implementations.

The goal of the tests — conducted with the assistance of the University of Missouri at Kansas City — is to assist the department in planning a GOSIP migration path.

But Robinson emphasized that division management, cognizant of the close business relationship with the federal government, went a step further by committing the entire division to migrating to OSI as well.

Robinson pointed out that a compelling business case for GOSIP compliance can be made, noting that X.400 is now often listed in government requests for proposal as the required method of communication with the government after contract award.

"We simply have to get to open systems," Robinson said. And the company is well on its way, he added.

In addition to cutting over its first X.400 gateway, the company recently said it plans to interconnect its six disparate electronic mail systems via an X.400 backbone.

Later this fall, Allied-Signal plans to connect a Control Data Corp. mainframe-based X.400 gateway to the division's internal Transmission Control Protocol/Internet Protocol-based backbone as a strategy to migrate plantwide E-mail for about 200 users.

And in order to carry out end-to-end testing of OSI products, Allied-Signal earlier this year became a member of OSINET, the X.25 OSI test network.

In lending technical support to the Energy Department, Allied-Signal has undergone a profound and, admittedly, tough learning experience during the past year.

Gault said the company has cut its teeth on bleeding-edge products that do not quite interoperate, citing FTAM products as especially difficult to install.

Dave Colyer, a communications systems engineer with Allied-Signal, said his company's and Intergraph Corp.'s personnel have spent nearly two months trying to get an FTAM product loaded onto the Intergraph workstation, as yet without success. And when Retix and IBM X.400 software failed to work together in an interoperability test, engineers tracked the problem down to a minor difference in implementation of the X.400 standard by the two vendors.

Although OSI products may come with conformance promises, lack of easy setup and compatibility is driving users to conduct their own product interoperability tests. "We are under the belief that every X.400 product we bring in here will have to undergo OSI conformance testing," Colyer said.

For that reason, Allied-Signal net specialists are setting up a GOSIP Team Local-Area Network at the Kansas City Division to serve as a test bed and educational facility for the Energy Department.

Colyer said the Ethernet LAN will include a Digital Equipment Corp. VAX computer running DEC's X.400 software, an Intel Corp. 80386-based personal computer running Retix X.400 software, a Hewlett-Packard Co. 720 workstation using X.400 software and an Intergraph workstation running X.400 software on top of Interactive Corp.'s version of Unix.

The LAN will be tied to a Compaq Computer Corp. SystemPro server running a multiprotocol Retix MH 441 gateway to other Energy Department facilities.

Although Allied-Signal has not yet adopted an official OSI policy company-wide — in contrast to several other large defense contractors such as The Boeing Co. — network engineers at the Kansas City Division emphasized that management awareness about OSI is now on the rise.

In its unique government subcontractor role, the Kansas City Division tends to be somewhat isolated from the rest of Allied-Signal. But Robinson expressed confidence that the company's growing body of knowledge about OSI will lead to wider corporate acceptance of OSI in the future.

VSAT lets users build T-1 mesh network

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VSATPlus is also based on a proprietary algorithm that uses a time-division multiplexing scheme, which means each unit has guaranteed time slots within which it can transmit data. Typically, VSATs use a contention scheme that requires some users to retransmit in the case of data collisions.

VSATPlus includes a Service on Demand feature that lets users devise multiple network configurations and switch them at will or according to the time of day. The feature can be employed to change the mix of bandwidth allotted to voice and data by the time of day, for example, or to guarantee availability of bandwidth for regularly scheduled videoconferences.

Scheduled for general availability in the fourth quarter, VSATPlus costs $39,900 for a base configuration with a 1.2-meter antenna, a 5-watt amplifier and a personal computer-based local operator console.

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Data Packets

continued from page 19

The product is supported under AT&T Paradyne's Comsphere 6800 T-1 DSU/CSU network management system.

As bandwidth requirements expand, users can upgrade the Acculink 731 to a 16-channel Acculink 741 voice/data multiplexer by installing new modules in the same chassis. The upgrade kit costs $2,930.

Available now, the Acculink 731 costs $5,300.

Newbridge Networks, Inc. of Herndon, Va., recently announced support for the Simple Network Management Protocol (SNMP) in its 4602 NetworkStation network management system.

The company rolled some of the capabilities of its previously announced 5638 SNMP management system into the 4602 to enable the 4602 to manage Newbridge packet products, such as local-area network bridges and routers, using SNMP.

The 5638 software, which is scheduled to ship this fall and costs $7,500, can be employed to manage other vendor's products that have SNMP agents.

SNMP will work with the existing Open Systems Interconnection modules of the 4602 to give users a single view of all network elements from the same graphical user interface.

The 4602 with SNMP support will also be available this fall as a free upgrade to users with software maintenance contracts. New 4602 software, which runs on a Sun Microsystems, Inc. SPARCstation, varies in price, starting at $10,000.

BlueLine Software, Inc. of Minneapolis recently announced a new version of its Systems Network Architecture performance monitor, Vital Signs for VTAM, which monitors SNA nets for line utilization, session statistics and VTAM performance.

Version 1.3 of Vital Signs for VTAM has a new hierarchical data display scheme that simplifies the process of displaying statistics. By placing a single letter next to any network component, users can display its performance statistics and find out to which front-end processor it is connected.

BlueLine has also added support for a mouse-driven interface by incorporating Attachmate Corp.'s Extra! Extended software to the Vital Signs for VTAM product. With the Attachmate software, users can employ the mouse to make selections from a personal computer emulating a 3270 terminal.

Other new features in Version 1.3 include support for token-ring statistics gathered through an IBM Token-Ring Interface Coupler, centralized collection of remote host network statistics and response time exception monitoring.

Vital Signs for VTAM Version 1.3 is available now for MVS, VSE and VM/GCS systems. Its price ranges from $8,680 to $20,350, depending on the processor.

Compression Labs, Inc. (CLI) of San Jose, Calif., recently announced its Rembrandt II/VP videoconferencing coder/decoder (codec) has passed the Px64 interoperability tests sponsored by the Communications Industry Association of Japan.

The company said it was the only non-Japanese manufacturer whose products were able to interoperate and run the video, audio and communications portion of the Px64 videoconferencing standard.

The test was prompted by the recent approval of the video compression portion of the Px64 standard by the CCITT.

The multimode Rembrandt II/VP video codec incorporates both standard and proprietary algorithms to provide connectivity to CLI's installed base and codecs from other manufacturers running the Px64 mode.

Among the Japanese companies that also passed the Px64 interoperability test were Canon, Inc., Fujitsu, Ltd., Hitachi, Ltd., Mitsubishi Corp., NEC Corp., Nippon Telegraph and Telephone Corp., OKI Electric Industry Company, Ltd., Sharp Corp., Sony Corp. and Toshiba Corp.

Worth Noting

"Oracle [Corp.] has finally heard the cries of its customers and investors; it knows it must make changes and has been making progress in several areas. But by 1994, the company's applications thrust and misunderstanding of the desktop segment will catch up with them. And it will cost them a leadership role in client/server."

Neal Hill
Senior analyst
Forrester Research, Inc.
Cambridge, Mass.

Netnotes

Shiva Corp., based in Cambridge, Mass., last week reduced prices for its line of Apple Computer, Inc. Macintosh Ethernet interfaces by more than 40%. Shiva's EtherPort Models II, IIT, SE, SE/T, SE/30 and SE/30T, which support various types of wire media, now cost $299.

In a similar move, **Asante Technologies, Inc.** of Sunnyvale, Calif., reduced the prices of its Macintosh Ethernet interface cards by as much as 20%. The company's MacCon+ Ethernet cards for thick or thin coaxial cable and MacCon+ cards for thin coaxial or 10Base-T networks now cost $299, down from $379. Asante's MacCon3 Ethernet cards, which support thick, thin and twisted-pair wire, now cost $379, reduced from $399 and $429.

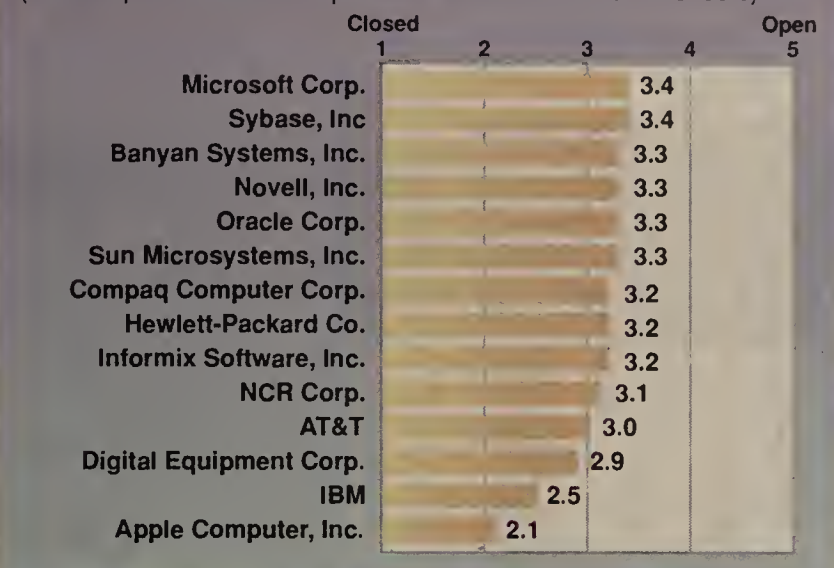
The recently formed **Open User Recommended System (OURS)** multivendor user group will hold an organizational meeting Oct. 14-16 in conjunction with NetWorld '91 in Dallas.

According to Elaine Bond, senior vice-president of corporate systems at The Chase

(continued on page 24)

Who's most open of them all?

Users graded the following vendors on whether they are open or closed (whether products are interoperable with those from other vendors):



GRAPHIC BY SUSAN J. CHAMPENY SOURCE: FORRESTER RESEARCH, INC., CAMBRIDGE, MASS.

Newport Systems enhances router with new protocols

LAN2LAN now supports TCP/IP and AppleTalk.

By Caryn Gillooly
Senior Editor

NEWPORT BEACH, Calif. — Newport Systems Solutions, Inc. has added support for two more protocols in the latest version of its software-only router for Novell, Inc. NetWare local-area networks.

Release 3.0 of the company's LAN2LAN router software includes support for the Transmission Control Protocol/Internet Protocol and Apple Computer, Inc.'s AppleTalk protocols. The added protocol support will enable Unix workstation users and Apple Macintosh users to exchange traffic over NetWare internetworks supported by the LAN2LAN router.

Previous releases of the product supported only Novell's Internetwork Packet Exchange (IPX) traffic.

"With Release 3.0, customers can now achieve wide-area network coexistence between TCP/IP, IPX and AppleTalk-based applications," said Larry Stephenson, president of Newport Systems Solutions, based here.

According to Harold Noborikawa, vice-president of marketing communications at Newport Systems Solutions, the router works as a NetWare Loadable Module (NLM) residing on a NetWare 3.x file server.

Noborikawa conceded that there are other multiprotocol routers and router-independent bridges available that could do the same job as his company's LAN2LAN product.

He said, however, that because the router is software-only, it costs less and can take advantage of capabilities inherent to NetWare.

The low-end model of LAN2LAN Version 3.0, available now, costs $2,695 and supports WAN links from 9.6K to 768K bit/sec. The high-end model is priced at $5,195 and can support T-1 speed transmission.

For comparison, pricing for Cisco Systems, Inc.'s lowest end multiprotocol router starts at about $5,000.

"This is much cheaper than most other multiprotocol routers because we don't have a computer to sell," Noborikawa said. "This is just software."

> The router works as a NetWare Loadable Module residing on a NetWare 3.x file server.
>
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Because the software is tied so closely to the operating system, LAN2LAN does not need its own Simple Network Management Protocol (SNMP) agent, but instead uses the SNMP agent included in NetWare. This means the administrator sees one set of statistics regarding the server and does not have to handle another set regarding the router.

The router will also be able to take advantage of the new network management platform currently being developed by Novell.

Association wraps up downsizing plan

California Trucking Association decreases data processing budget by moving to LAN platform.

By Timothy O'Brien
West Coast Bureau Chief

SACRAMENTO, Calif. — Having successfully downsized its mainframe-based membership data base to local-area networks, the California Trucking Association (CTA) will pull the plug on its mainframe next month and roll it out the door.

In fact, Chief Information Officer Stephen Saks surprised the board of directors last year when he first proposed decreasing the data processing budget by migrating to a LAN platform.

"DP budgets normally rise because you have to pay for your mainframe forever," Saks said. "But by moving to LANs, we got an eight-month payback and reduced our data processing budget for years."

CTA, a nonprofit trucking trade association, relies heavily on its data bases to provide its 2,500 members with services that include education, insurance, labor negotiation assistance and legal advice from its offices here in California's state capital.

CTA had originally planned on converting its VSAM membership files on its IBM 4331 host to a mainframe SQL data base but abandoned that idea because of the prohibitive cost of maintaining the mainframe.

Instead, Saks two years ago implemented a pilot LAN and began evaluating development tools to rewrite its host applications for LANs. Based on the success of that prototype, CTA installed three more LANs to support 60 users in Sacramento and installed another net in its Southern California office.

The Ethernet LANs support Intel Corp. 80386-based file servers and run Novell, Inc.'s Net-

(continued on page 24)

DOS tool provides link to TCP/IP nets, Unix devices

By Caryn Gillooly
Senior Editor

LIVERMORE, Calif. — Six Sigma, Inc. recently introduced a product designed to tie personal computers into Transmission Control Protocol/Internet Protocol-based networks, thereby simplifying use of the network resource.

Called SigmaNet, the product is designed for two uses: to link DOS machines to TCP/IP nets, enabling them to share files with Unix-based workstations; and to connect DOS machines to other DOS devices using TCP/IP.

According to Doug Daniel, president of Six Sigma, based here, other vendors offer products that let DOS users access Unix files. But, he said, the majority of those products require users to know Unix commands.

"We aren't the first to put PCs on a TCP/IP network," he said. "[But] DOS users need intuitive, simple, obvious user interfaces. SigmaNet makes Unix easier for DOS users."

SigmaNet comes with an Ethernet card and four programs — install, configure and two terminal-emulation and file-transfer programs.

The first program, called TFX for terminal emulation and file transfer, basically enables DOS machines to emulate a Digital Equipment Corp. VT-100 or a Tektronix, Inc. 401 asynchronous terminal. It also lets DOS personal computers establish a session with and transfer files to and from a Unix workstation on the TCP/IP net using the TCP/IP File Transfer Protocol (FTP).

The second program, called DFX for directory file transfer, is used for more complex file transfers, Daniel said. This program lets the user display directories from the local personal computer and the remote workstation in two windows on the same personal computer and initiate transfers from the directories.

The other primary use of SigmaNet is to connect a group of stand-alone personal computers without a server.

"Unlike a PC LAN, SigmaNet connects PCs with dissimilar computers," Daniel said. "SigmaNet does not compete with PC LANs, it complements PC LANs."

SigmaNet is available now at $695 for the card and four software programs. Without the Ethernet card, it costs $395.

Netnotes

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Manhattan Bank, N.A. and chairwoman of the OURS steering committee, the group's long-range goal is to speak with a unified voice to the multivendor networking community about what users need and how vendors can meet those needs.

The group's initial focus, however, will be to push for interoperability.

For more information on OURS or its October meeting, call (800) 237-6877.

GigaTrend, Inc. last week introduced a server-based digital audio tape (DAT) backup system for Novell, Inc. NetWare 3.11 local-area networks. The product, called Dual ServerDat, is the industry's first 8G-byte server-based DAT backup and restoral subsystem designed specifically for NetWare LANs, according to GigaTrend officials.

Dual ServerDat includes a NetWare Loadable Module (NLM) for the NetWare server that is automatically loaded and unloaded from the server's memory when needed. Once loaded, the NLM uses an intelligent tape array controller to write data to two DAT drives simultaneously.

According to the company, based in Carlsbad, Calif., Dual ServerDat can perform unattended server and local disk backups in background mode without interrupting active applications.

The external DAT drive is compatible with servers based on the Industry Standard Architecture (ISA), Extended ISA and Micro Channel Architecture. The drive is connected to the server via a high-performance Small Computer Systems Interface.

Dual ServerDat is available now and pricing starts at $17,750.

Tool provides link to TCP/IP

continued from page 23

Ware network operating system. In addition, a data base server with 2G bytes of storage was added in Sacramento to accommodate the 400M-byte membership data base.

All users in Sacramento can access the data base server through the internetworked LANs. Next year, the Southern California office will also be tied in over a wide-area link.

CTA used Micro Focus' COBOL to write the new membership data base application based on a client/server model. Nantucket Corp.'s Clipper and other tools were used to build a user-friendly front-end interface to a GUPTA Technologies, Inc. SQLBase SQL data base.

The main objective in designing the new membership application was to make it possible for users to make data requests themselves rather than rely on

Put in production in January, the new application performs many tasks within the shell of a large, single data base.

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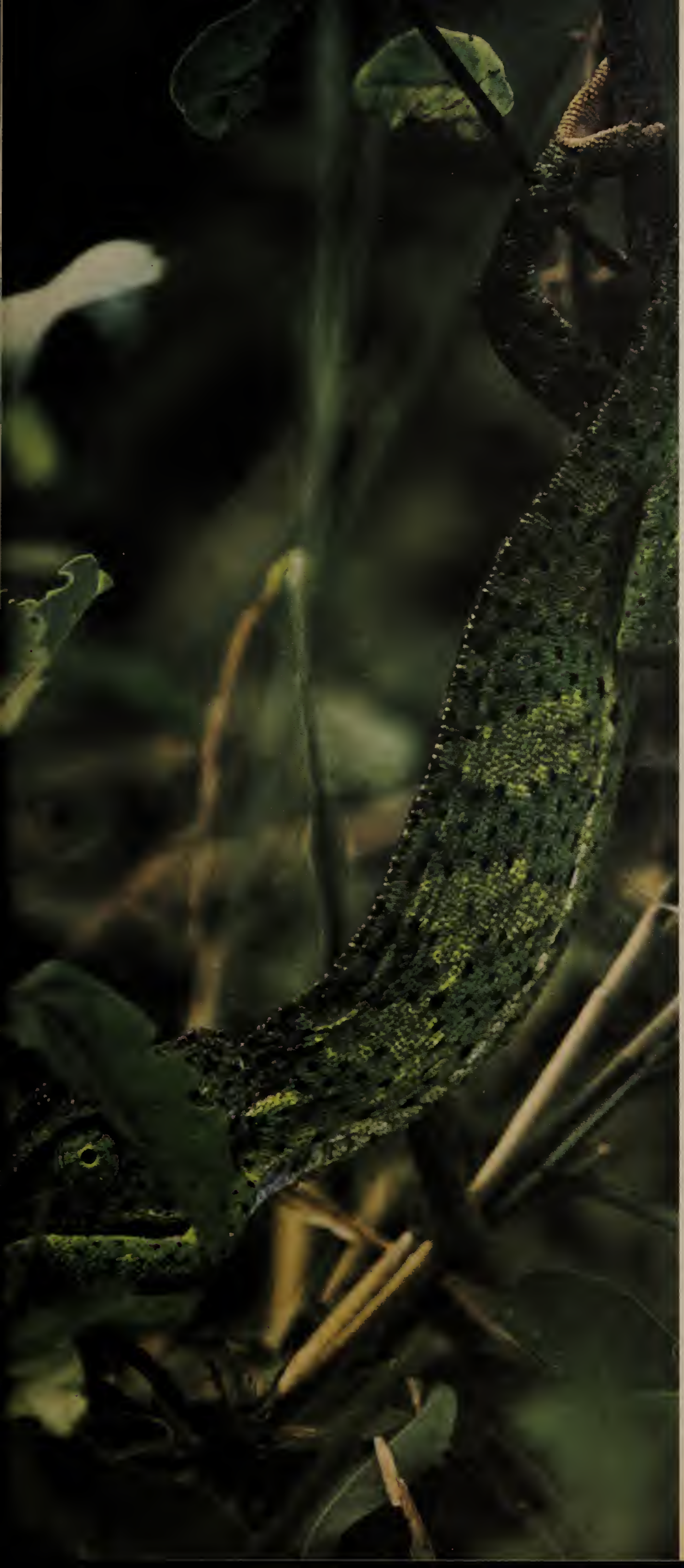
printed reports from the information systems staff, which had been necessary with the mainframe system.

CTA approached the nine-month development with the same type of structured methodology it would have used in a mainframe development project. Put in production in January, the new application performs many tasks within the shell of a large, single data base. For instance, the data base includes information about members such as profiles, interests, activities and dues.

After running the LAN in parallel with the mainframe this year, Saks said the new network is now stable as a rock and users have responded well to its ease of use, speed and increased access to data. "I've been quite impressed with how smoothly everything went," he added.



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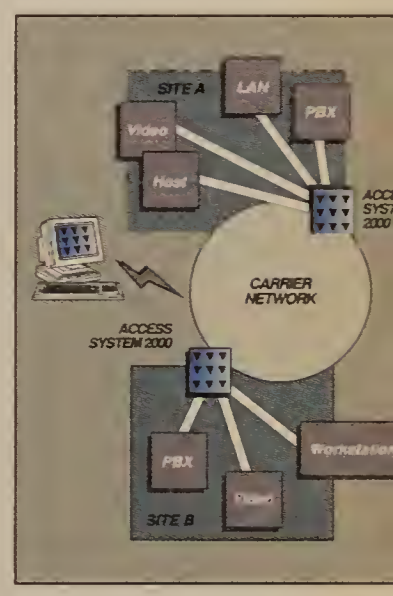

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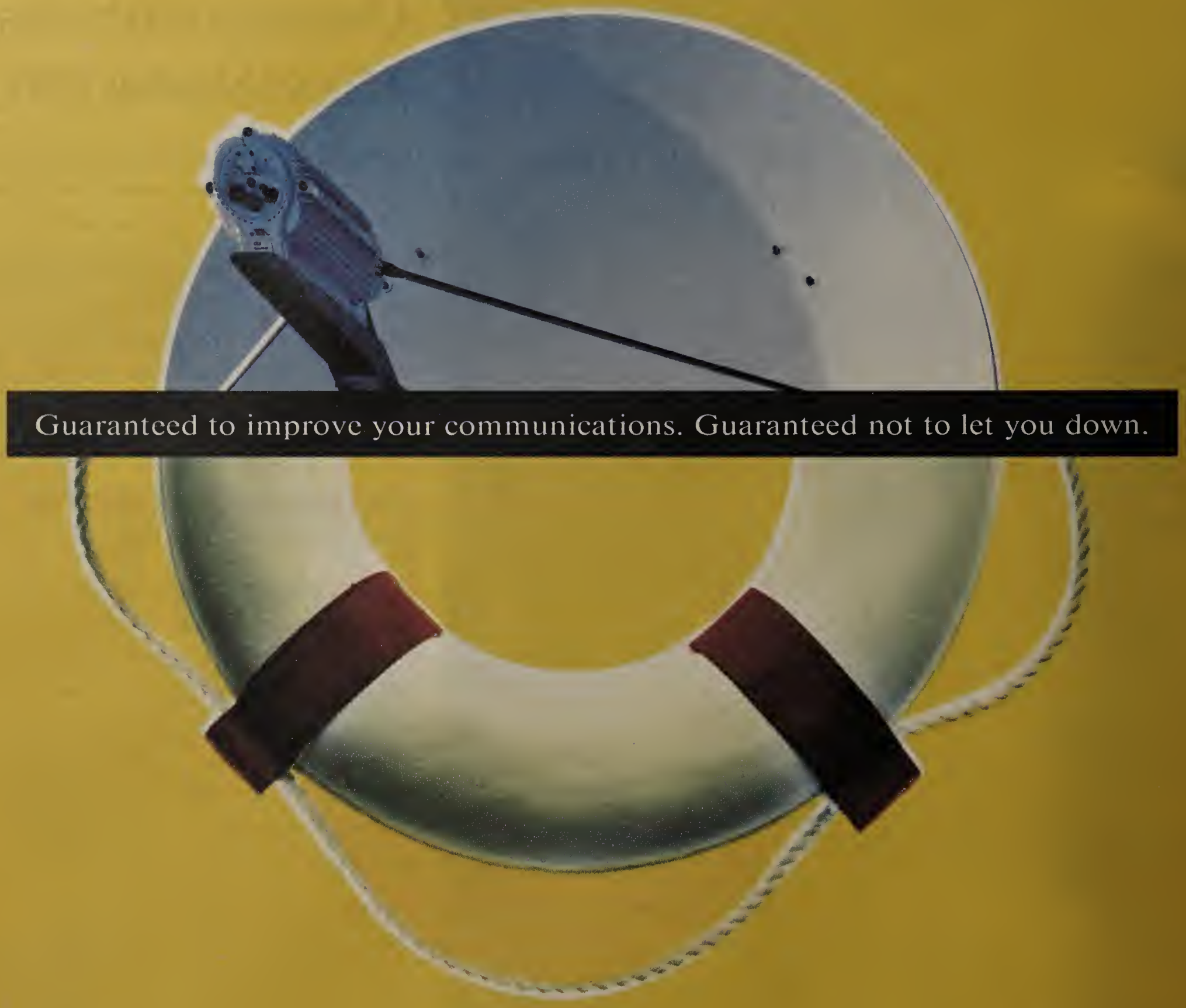

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THE POWER IS ON

Dialogue

Does the network field offer the same opportunities for career advancement that it did several years ago?

"Definitely yes. It offers better opportunities simply because more networks are being installed in companies and they're getting larger. So there's a real need for people to design, install and maintain these networks.

"In fact, people doing traditional MIS tasks will need to learn about network design and network applications if they hope to advance."

William Heffler
Telecommunications manager
Southern California Rapid Transit District
Los Angeles

"Yes, especially for those who are familiar with LANs and other emerging technologies.

"We're currently migrating from a mainframe to a distributed environment and have had difficulty finding enough people who have expertise in LAN and WAN technology."

Dennis Anderson
Director of computing systems and application specific integrated circuit engineering
LSI Logic Corp.
Milpitas, Calif.

"Yes. The opportunities are better because the real economic advantages to be gained by companies today are on the network as opposed to the hardware side.

"Any business advantages that can be obtained from the hardware end have probably already been acquired. But the network side is where future business advantages can be achieved."

Charles Murray
Telecommunications director
Travelers Insurance Co.
Hartford, Conn.

"No. We're in the midst of a major recession so people are more preoccupied with the state of the economy than with career development. Judging from all the resumes I see, people are more concerned with employment than job enhancement."

George Adler
Vice-president of information services
Children's Hospital
Boston

(continued on page 29)

IBM lawsuit raises fears about equipment leasing

Action against Comdisco threatens competition.

By Maureen Molloy
Staff Writer

A recent lawsuit by IBM Credit Corp. (ICC) charging its prime competitor in the computer and network leasing market with illegally subleasing ICC assets could have far-reaching ramifications for users that lease new or used IBM equipment.

Users and others contend that ICC's suit against Comdisco, Inc. will stifle competition in the used equipment market and drive up costs for computer and network gear.

ICC, the leasing subsidiary of IBM, maintains in the pending lawsuit that its assets are unprotected when users of ICC-leased gear receive upgrades from Comdisco in the secondary market. The company characterizes the disassembling of systems and the subleasing of ICC assets as a misappropriation of ICC-owned computer parts.

Users and third-party lessors say ICC is fighting what has long been standard practice in the leasing industry. Users often sublease IBM parts, such as memory components from third-party vendors, during the course of an ICC lease.

This practice, known as fungibility, is based on the belief that computer parts are interchangeable as long as they bear the same part number.

"ICC is taking a position that directly contradicts accepted industry practice," said Kenneth Bouldin, president of the Computer Dealers and Lessors Association in Washington, D.C. "It has long been taken for granted that equivalent replacement or reconfiguration parts are equal in value to the original components and, therefore, do not alter the original asset."

And many users agree. In a recent survey of MIS and computer leasing company executives, 80% perceived ICC as more interested in protecting itself from competition than in protecting ICC assets (see graphic, page 28). ICC, which controls about 70% of the new computer systems currently on lease, could also dominate the secondary leasing market if the lawsuit is successful, they said.

Comdisco is not the first company to be stung by an ICC lawsuit. The IBM unit last winter brought suit against Cambex Corp. and EMC Corp., two add-on memory suppliers, charging them with allegations similiar to those raised in the Comdisco action. An out-of-court settlement was reached several months later among the parties.

(continued on page 28)

Off-track betting service puts money on digital net

By Wayne Eckerson
Senior Editor

NEW YORK — Catskill Off Track Betting (OTB) is implementing an all-digital branch office network that is expected to save the firm more than $1 million over the next five years and improve network reliability.

The network will consist of dedicated 56K bit/sec lines linking Catskill OTB's headquarters and data center here to the company's 30 branch offices in upstate New York.

It will provide access from computers at the branch offices to processors at the data center and will be used to transmit prerace information such as lineups and odds, as well as live audio broadcasts of the races, to each branch office.

The digital network replaces an analog multidrop network of 2,400 bit/sec lines, which was not reliable, according to Porter Houston, a senior technical consultant at General Instrument Corp., a systems integration firm based in Hunt Valley, Md., that is installing the network for Catskill OTB.

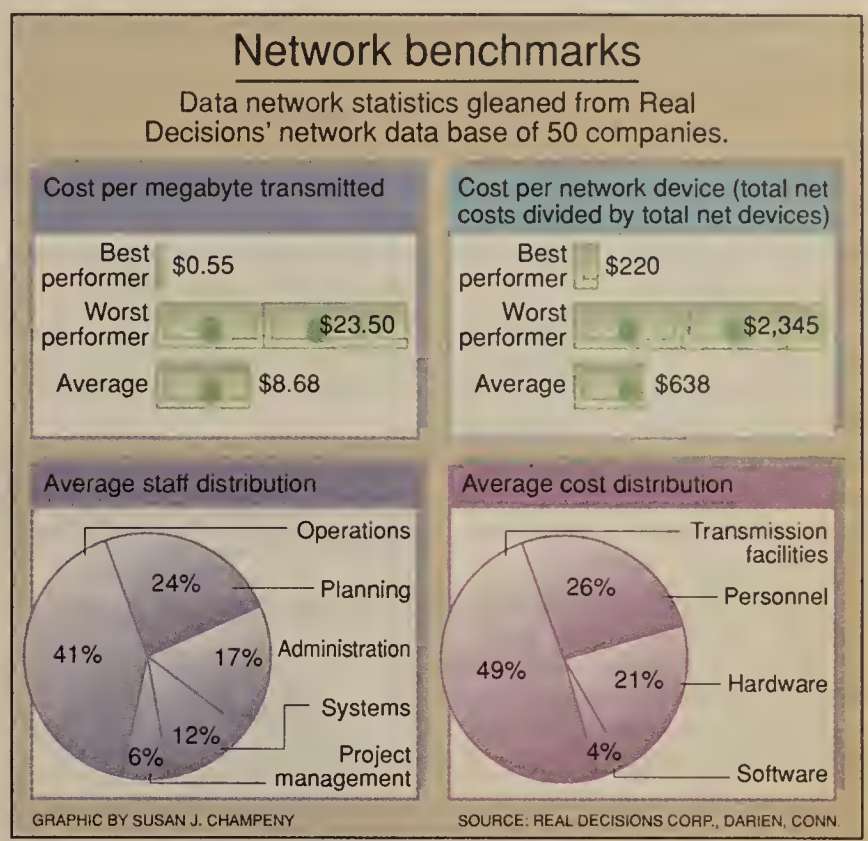
"Catskill OTB has experienced 15 years of poor service from local telephone companies in the upstate New York region," Houston said. "It's always been a network nightmare up there."

Charting a new course

The remodeled network uses New York Telephone Co.'s Digital Data Service (DDS) II for the point-to-point 56K bit/sec lines. It also uses New York Telephone's switched 56K bit/sec service for backup.

"This is the first time a wagering network that we know of has made use of this type of ser-

(continued on page 29)



Benchmarking aids IS in tough times

Net managers are using the tests to measure their operations against comparable businesses.

By Wayne Eckerson
Senior Editor

DARIEN, Conn. — Threatened by outsourcing and admonished by senior executives to reduce costs and improve quality, many network managers are using benchmarking as a tool to illustrate their strengths and diminish their weaknesses.

To determine how their network costs and performance stack up against other companies', many net managers have turned to Real Decisions Corp., a consulting firm that performs network and systems audits of Fortune 500 firms and maintains an extensive data base of performance metrics.

Those metrics include data such as cost per megabyte of information transmitted and network cost per employee.

Founded in 1982, Real Decisions, based here, initially conducted data center evaluations. But interest in network benchmarking has grown steadily since the mid-1980s, and the firm now has 50 companies represented in its annually updated network data base and 175 companies in its data center data base.

According to Kathleen Barret, director of network services at Real Decisions, the current recession has created greater interest in benchmarking. Many firms under pressure to cut costs use the benchmark analysis as a way to identify inefficiencies. "The recession seems to have helped our business," Barret said.

But net managers also use the benchmark analysis to demonstrate to upper management that their network is being run as efficiently as possible in order to forestall an outsourcing decision, Barret said. The analysis can also show net managers what areas to improve before senior managers even consider outsourcing.

In addition, some companies use Real Decisions' analysis as a way to sort out what is driving network expenditures. Many large companies offer so many services, such as videoconferencing and electronic messaging, across the same utility, they do not always have a clear idea what each service is costing, Barret said.

Finally, competition for the U.S. Commerce Department's Malcolm Baldrige Award, which requires applicants to describe their benchmarking activities, has also fueled interest in Real Decisions' services, said Charles Ambuhl, the company's director of consulting.

In-depth analysis

Currently, Real Decisions provides evaluations of five types of networks: wide-area data networks; wide-area voice networks, including virtual and electronic tandem nets; premise voice and data networks, including local-area networks and single-site private branch exchanges; and international networks.

Each year, new subscribers

(continued on page 29)

Lawsuit raises leasing fears

continued from page 27

Robert Kramer, vice-president of information systems at New Hampton, Inc., a catalog company in Hampton, Va., said that if ICC wins its suit against Comdisco, users stand to lose because the cost benefits associated with leasing equipment could be greatly diminished.

Kramer himself got caught in the middle of the corporate squabble between ICC and Comdisco last year when he contracted with Comdisco to upgrade the memory on his IBM 3090 mainframe, which was leased from ICC.

Because of a restraining order barring Comdisco from remarketing the memory, Kramer was forced to pay $300,000 for an upgrade that would have cost $50,000 prior to the lawsuit.

"I see ICC controlling the market by not allowing users to alter IBM machines and forcing them to swap machines instead," Kramer said. "If ICC wins, users will find they have one company — a manufacturer — setting the prices for all upgrades, and that's something that benefits no one but ICC.

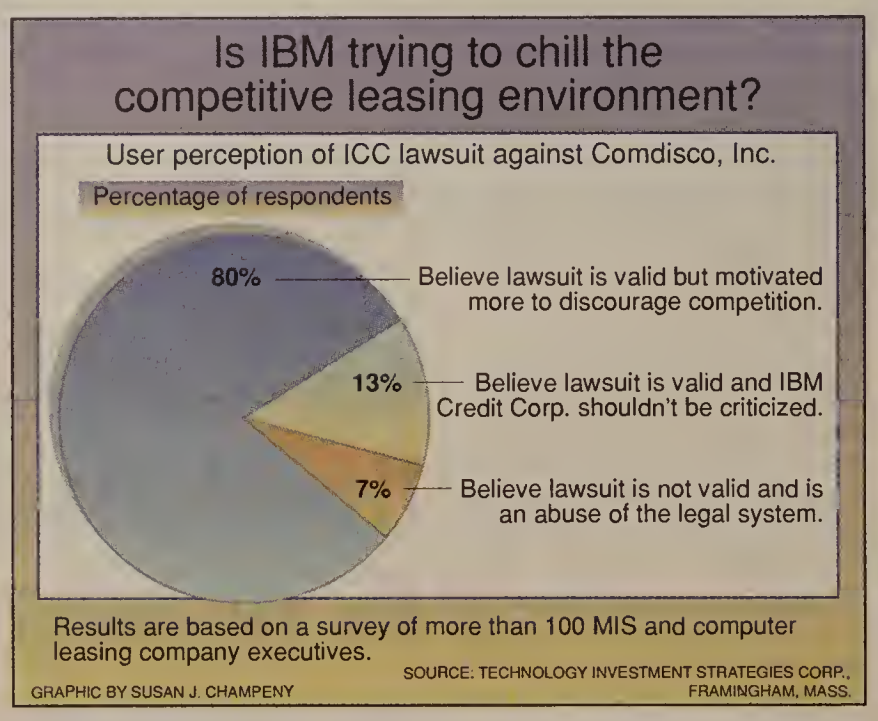
"It'll be a long time before I do business with ICC again since they clearly are restraining my ability to choose the most competitive leasing options," he added.

The user loses

Thomas Donovan, director of the Framingham, Mass.-based consultancy Technology Investment Strategies Corp., said the third-party lessor's ability to remarket parts is the key to competitive pricing. If third-party lessors are barred from remarketing, the user would be the ultimate loser.

"It leaves the user with much less flexibility in terms of what they can and can't do when they lease an ICC computer," he said.

Donovan stressed, however, that the onus is on the user to ensure that the equivalent machine is returned to ICC, and therein lies a risk. If a lessor company files for bankruptcy, for example, and cannot replace the ICC piece at lease end, the user is ultimately responsible for returning the equipment to ICC.



"This scenario is not likely to occur with a large and financially sound independent lessor like Comdisco, but it is possible if the user subleases from a smaller independent," he said.

Kenneth Pontikes, Comdisco chairman and chief executive officer, said that although Comdisco is equally concerned about asset protection, "there needs to be a reasonable way to ensure that all lessors' assets are protected without restricting the user's rights to sublease or reconfigure equipment."

He said the return of like parts with a warranty of clear title at lease end is reasonable assurance of asset protection.

Douglas Crawford, manager of administrative services at Texaco, Inc. in Houston, said the free movement of equipment is crucial to meeting the frequently changing computing needs of users.

Crawford, who is responsible for negotiating the lease and purchase of all of Texaco's computing equipment, said restricting the flow of used gear threatens users' access to economical alternatives and affects pricing and flexibility.

"Our end-user requirements change constantly, so we need to have the flexibility to reconfigure our equipment, such as adding more CPU power, at any time to respond," Crawford said. "ICC is now trying to impose limitations on that flexibility."

Users with fairly static requirements would benefit from ICC's competitive rates. But users such as Texaco that demand flexible terms and conditions in reconfiguring equipment should stick with third-party lessors, he advised.

"ICC offers the most attractive leasing rates, but there's no question that the user has greater flexibility in their leasing terms and conditions with an independent lessor," Crawford said. "The bottom line is that the user must decide if the trade-off is worth it."

> The third-party lessor's ability to remarket parts is the key to competitive pricing.
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Benchmarking aids net managers

continued from page 27

and existing customers fill out a comprehensive 30- to 40-page questionnaire that covers a variety of areas, such as network configuration, network components, traffic patterns and volumes, staffing and budget processes. Information from the questionnaires is compiled in a data base and used to calculate a series of metrics against which all subscribers are measured.

For data networks, these metrics include cost per megabyte transmitted, cost per person and traffic volumes per device (see graphic, page 27). Voice network metrics include cost per call, cost per minute, call distribution by minute and line capacity utilization.

Real Decisions also evaluates each firm's chargeback practices and how they compare to practices at companies with similar network and business environments.

Barret said it may take some companies, especially new subscribers, as long as four or five months to compile the questionnaire data.

To ease the process, Real Decisions provides a methodology for collecting data and sends an account representative to the user's site to review the completed questionnaire and collect other qualitative information, such as business goals and future network plans.

"Many companies benefit immensely from the process of collecting the data," she said. "For some, it's the first time they've tried to count what they've installed."

Consistency is key

Barret said Real Decisions makes great efforts to ensure that the data it collects is consistent from one company to another. Often, the firm will eliminate certain categories of data if all the companies in the data base can not provide the information. For example, Real Decisions doesn't tabulate cost or traffic data on cluster controllers because all companies are not able to collect such information.

"We often seek out the lowest common denominator to ensure our comparisons will be valid," Barret said.

In the same vein, Real Decisions conducts analyses of the five network types separately, even though many firms are asking them to do an end-to-end network analysis.

"There are so many hidden elements in every network that it would be easy to miss some details that would skew the data," Barret said. "It's important to analyze each network separately."

After the data is collected, Real Decisions compares the cost and performance of each company's network against a set of metrics gleaned from the overall data base. It also compares the subscriber's network to a subgroup of companies within the data base that share the subscriber's network and business profile. This peer group evaluation often provides more meaningful comparisons.

For example, companies that require 100% uptime and have built complete redundancy and diverse routing into their networks, such as airline reservation networks and financial service firms, will score much higher on cost metrics than firms that do not have such rigorous network requirements, Barret said.

As part of the evaluation, Real Decisions offers advice on how the company could improve its performance. But many companies take the results of the benchmarking exercise to independent consultancies that will optimize their network design using sophisticated modeling techniques and design software, according to Richard Taylor, a director at Real Decisions.

Some network groups include the results of the analysis in their annual information systems (IS) report, their firm's executive IS report or publications sent to customers, Ambuhl said.

The cost of the benchmark evaluation ranges from $20,000 to $60,000, depending on the complexity of the subscriber's network and the amount of assistance they need compiling the data, he said.

Dialogue

continued from page 27

"The opportunites are better and will continue to get better. There's been a lot of mainframe bigotry, and PC LAN people haven't been treated with the same respect within the organization, but that's changing.

"The concept of enterprise networking will become paramount to corporations, so it follows that the people running the network will become prominent."

Larry Frederickson
LAN administrator
Valmont Industries, Inc.
Valley, Neb.

OTB puts money on digital net

continued from page 27

vice," according to Houston.

To build the digital network, Catskill OTB purchased multiplexers from Dowty Communications, Inc. and data service unit/channel service units from Integrated Network Corp. that enabled Catskill OTB to consolidate voice and data traffic.

New York Telephone hands off inter-local access and transport area calls to US Sprint Communications Co., which relays them to a New York Telephone central office near the corresponding Catskill OTB office.

The DDS II network costs roughly half of what the analog network costs per month, Houston said. Instead of running four 2,400 bit/sec wires to each office, Catskill OTB only has one 56K bit/sec line into each office.

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privately-owned transatlantic fiber optic cable completed. 1990 *Sprint announces first commercial video services to the Soviet Union. Sprint introduces first nationwide ISDN capabilities.*

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MIS Operations Manager
Convex Computer Corporation

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INTERNATIONAL NETWORKS

USER STRATEGIES, INTERNATIONAL SERVICES & REGULATION

World News

Start-up **International Discount Telecommunications Corp. (IDT)** last week said it will announce plans to significantly alter its approach to selling low-cost international calling services at the Telecom '91 conference next month in Geneva.

IDT began marketing low-cost calling services earlier this year. The company said it could undercut foreign carrier international calling rates by letting callers abroad access dial tone in the U.S. and complete international calls at the less expensive U.S. carrier rates.

IDT offered the service via customized call processors in New Jersey that would recognize calls from IDT customers in foreign countries, call those customers back using U.S. carrier services and then give foreign callers dial tone in the U.S.

IDT initially planned to make money by marking up U.S. carrier charges and still offering discounts over foreign carrier rates.

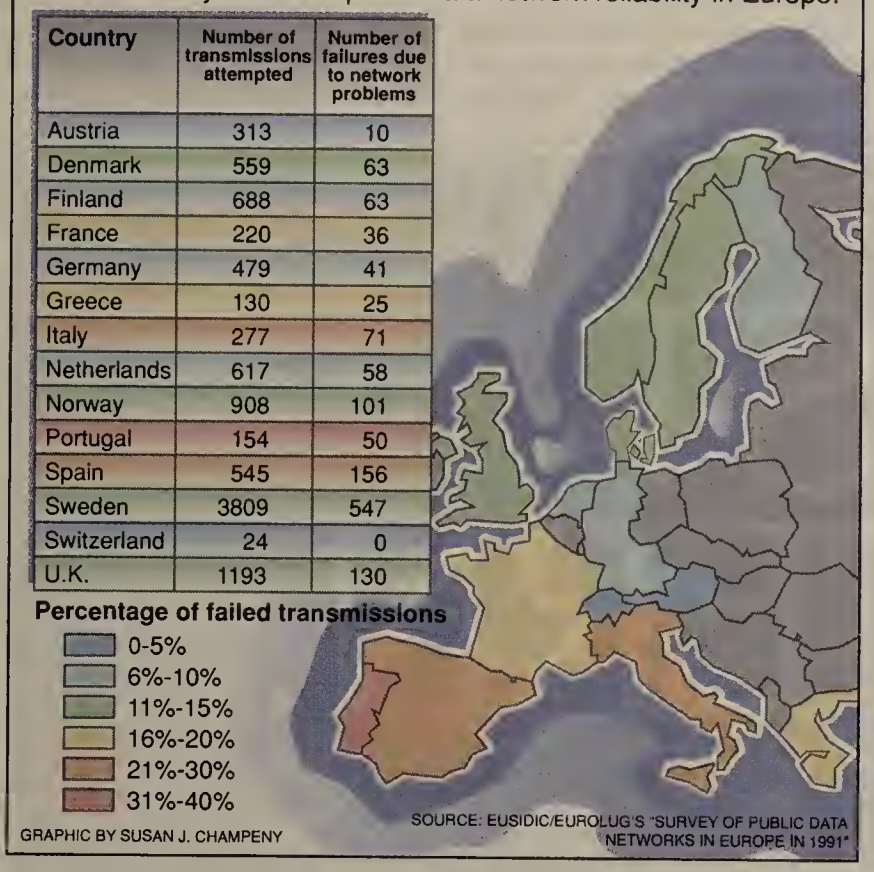
Now, however, Howard Jonas, IDT's founder and president, said the company will focus on leasing its call processors to users. This will enable users abroad to avoid IDT's markup and to complete international calls at the fully discounted rates they receive from U.S. carriers.

Jonas said each call processor can handle one call at a time. IDT will lease the first call processor for $200 per month and each subsequent call processor for $100 per month.

Network problems hamper European PDNs

Recent survey results of public data network reliability in Europe:

Country	Number of transmissions attempted	Number of failures due to network problems
Austria	313	10
Denmark	559	63
Finland	688	63
France	220	36
Germany	479	41
Greece	130	25
Italy	277	71
Netherlands	617	58
Norway	908	101
Portugal	154	50
Spain	545	156
Sweden	3809	547
Switzerland	24	0
U.K.	1193	130



PDN service quality mixed across European countries

Study shows significant differences in reliability.

By Barton Crockett
Senior Editor

CALNE, ENGLAND — Although the overall quality of public data network (PDN) services in Europe is improving, there are marked differences in the reliability of PDN services in northern and southern Europe, according to a recently released study.

The "Survey of Public Data Networks in Europe 1991" found that the quality of PDN services in Europe has improved steadily since the study was first conducted in 1986. But there remain significant differences in reliability across the continent.

For example, between 9% and 12% of transmissions over PDNs in northern European countries fail due to problems in PDN facilities. By contrast, between 25% and 30% of transmissions over PDNs in southern European countries fail (see graphic, this page).

The data reinforces the widely held perception that public nets in less industrialized southern European countries are less developed than public networks in the wealthier countries of northern Europe.

The study was released by the European Association of Information Services (EUSIDIC), based here, and the European Online User Groups (EUROLUG) last month. PDNs are public packet-switched networks, typically operated by monopoly carriers, that support such enhanced ser-

(continued on page 34)

AT&T facing delays in global 800 service

Foreign carrier numbering plans and insufficient capacity for toll-free service cited as problems.

By Barton Crockett
Senior Editor

MORRISTOWN, N.J. — AT&T last week said it is experiencing significant delays in cutting over international toll-free numbers in about a quarter of the nearly 60 countries where it offers the service.

AT&T spokesman David Bikle said the carrier first began experiencing provisioning delays in some countries several months ago, although he declined to say how many users have been affected or in which countries the delays have occurred.

Bikle said AT&T's lead times for provisioning international toll-free numbers range from a low of one day in an unspecified country to a high of 35 days in Mexico. AT&T's average lead time for deploying an international toll-free number is now about 10 days and has been declining. He explained that delays have occurred in some countries when demand has outstripped foreign carrier facilities.

A better track record

US Sprint Communications Co., by contrast, takes an average of three days to deploy new international toll-free numbers, with a high of 16 days in the Bahamas, according to Rick Flamand, the carrier's director of international product planning in Kansas City, Mo.

However, consultants said provisioning delays in some countries may be longer than AT&T and other carriers claim.

"I think it's entirely probable [that carriers are experiencing longer delays than they are acknowledging], especially where the service is new," said Mark Heckendorn, managing director of Washington, D.C.-based Versus Strategy Group, Inc., which consults carriers on competitive strategies.

Heckendorn, who specializes in toll-free services, said he expects provisioning delays to be as long as 60 days for customers in countries where carriers recently commenced international toll-free services.

> AT&T's average lead time for deploying an international toll-free number is now about 10 days and has been declining.
>
> ▲▲▲

AT&T introduced its international toll-free service, called International 800 Service, in 1984. That service allows foreign users to call companies in the U.S. at no charge.

Currently, AT&T offers toll-free calling from 57 countries. Service from 15 of those countries has commenced since the beginning of 1990.

"Customer demand has driven a lot of changes [by foreign carriers]," he said. "We expect it will get better, but I can't tell you how fast."

(continued on page 65)

PDN service quality mixed

continued from page 33

vices as electronic data interchange, electronic mail and online information services.

EUSIDIC and EUROLUG tested the reliability of PDNs by having their members and representatives of the International Telecommunications Users Group attempt nearly 10,000 international transmissions over PDN facilities in 18 European countries. These transmissions were attempted between April 15-19.

Users recorded success rates and reasons for failures on forms distributed by EUSIDIC and EUROLUG. The two organizations have run this survey annually since 1986.

Overall, 19.5% of all the transmissions attempted this year failed, compared to 30.7% when the study was first conducted in 1986. Failure rates in 1987, 1988 and 1989 were 29%, 25.4% and 24.2%, respectively.

But many of these failures can be attributed to user errors or other problems not associated with PDN services. As a result, PDN performance is only measured by the failures that can be attributed to PDN facilities.

Failures attributable to PDN facilities include such things as busy signals at local PDN nodes, which EUSIDIC and EUROLUG said is normally a sign that traffic exceeds the level for which a PDN service provider has planned. Also included are transmissions that failed because of excessive line noise, congestion or problems with PDN equipment.

In this year's study, about 13.7% of all transmissions failed because of problems attributable to PDN facilities, compared to 14.3% in 1990 and 18% in 1989 — the first year EUSIDIC and EUROLUG separated PDN-related failures from all failures.

Even though PDN performace has improved over the years, EUSIDIC and EUROLUG cautioned that differences of less than 4% are not statistically significant. But EUSIDIC and EUROLUG said the surveys do point out significant differences between the reliability of PDN services in northern and southern Europe.

For example, Austria had the lowest failure rate this year, with 3.2% of the 313 transmissions originating in the country failing because of PDN service problems. The U.K.'s failure rate attributable to PDN facilities was 11%, compared to 14% last year.

Denmark's failure rate attributable to PDN facilities was 11%, while Germany's failure rate was 8.6%, Norway's was 11% and Sweden's was 14.4%.

By contrast, Spain's failure rate due to PDN facilities this year was 28.6%, compared to 29% last year and 31% in 1989. Spain's PDN services are also among Europe's most expensive, according to EUROLUG.

Greece's failure rate attributable to PDN facilities was 19.2%, while Italy's was 25.6%. Portugal's failure rate of 32.5% was the worst in this year's study.

EUSIDIC and EUROLUG offered no explanation why PDNs in southern Europe fared worse than PDNs in northern Europe. But government officials in the Commission of the European Community and elsewhere have long maintained that public network facilities in relatively wealthy, northern European countries are more modern and extensive than public net facilities in southern European countries.

EUSIDIC and EUROLUG also compared the number of failures for transmissions routed over dedicated lines into a PDN node with transmissions routed into PDNs via dial-up links.

Transmissions routed over dedicated local access lines fared much better, with a failure rate of 6.7% overall, compared to the dial-up failure rate of 16%. Nearly 25% of all the transmissions this year were routed over dedicated facilities, while the rest of the transmissions were routed over dial-up links.

"It appears that, despite the [public telephone operator] stance as being champions of the little guy, it still pays the user to be a bigger guy and to invest in better communication facilities," EUSIDIC and EUROLUG wrote in the text of their study.

PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

First Look

HP boosts printer cards to support multiple systems

Hewlett-Packard Co. last week enhanced its line of printer network interfaces to support other network operating systems.

As originally announced earlier this year, the local-area network interface cards for the company's HP LaserJet IIISi, III, IIID, IID and Series II laser printers could be used with token-ring or Ethernet networks running Novell, Inc. NetWare or 3Com Corp.'s 3+Open Version 1.1, a derivative of Microsoft Corp.'s LAN Manager net operating system.

The interfaces have been upgraded to support Microsoft LAN Manager 2.0 and above, as well as IBM LAN Server 1.3 and later versions.

The cards, which fit into an I/O slot in the back of each printer, enable users to locate printers anywhere on a LAN, eliminating the need to attach them directly to servers.

In terms of performance, an interface card for an eight-page-per-minute LaserJet or Series II printer can receive data at roughly twice the speed of a standard parallel I/O interface. The LAN Manager and LAN Server interfaces for the 17-page-per-minute HP LaserJet IIISi can receive data at speeds greater than 200K bytes/sec, 15 times faster than a parallel interface.

Attaching printers directly to networks instead of servers can also improve printing speed from five to eight times by eliminating the need to wait for servers to juggle print and other processing jobs.

The interface card supporting Microsoft LAN Manager costs $695, while the new board for IBM LAN Server costs $895. Both are available now.

HP Company Inqutries, 19310 Prunerldge Ave., Cupertino, Calif. 95014; (800) 752-0900.

MCC unveils interface for Macintosh micros

Multiaccess Computing Corp. has announced the **MCC-1000 SMDSTalk NuBus,** an interface for Apple

(continued on page 39)

Microcom to intro router, V.32 modem

NORWOOD, Mass. — Microcom, Inc. is scheduled to introduce today a V.32 modem and the company's first local-area network router, both of which are designed to optimize use of wide-area network links.

The latter of the two, the Microcom Bridge/Router (MBR) 6000, is a personal computer-based product that can simultaneously support source routing traffic flowing among token-ring LAN segments while routing Novell, Inc. NetWare Internetwork Packet Exchange (IPX) traffic among token-ring and Ethernet LANs.

While the MBR 6000 only routes IPX traffic, it can bridge other protocols such as Digital Equipment Corp.'s DECnet, the Network Basic I/O System protocol and the Transmission Control Protocol/Internet Protocol.

Users can logically separate subnets and create network topologies with multiple redundant paths between LANs to maximize performance and reliability, the company stated.

Configured as a local bridge/router, the MBR 6000 can be outfitted with up to three 10M bit/sec Ethernet or 4M/16M bit/sec token-ring interfaces.

When used to link local LANs to remote LANs, the MBR 6000 can be configured with as many as four WAN serial interfaces supporting speeds ranging from 9.6K to 2.048M bit/sec or two LAN links and two remote ports.

According to Margaret Foley, Microcom's LAN product manager, the WAN interfaces are equipped with a Motorola, Inc. 68000 microprocessor, meaning each card in an MBR 6000 can operate at the full 2.048M bit/sec speed without affecting the performance of the bridge/router.

Another version of the device, the MBR 6500, comes with soft-

(continued on page 39)

New fiber switch provides automatic line restoral

SHELTON, Conn. — Data Switch Corp. this week plans to announce a new line of fiber-optic switches that provide automatic circuit restoral in the event a primary fiber line fails.

The Variswitch Fiber Optic Switch System minimizes network downtime by automatically sensing optical signal loss or line degradation and cutting over to a backup fiber line.

It can be used in private data nets, for instance, to provide alternate routing for mainframe channels or local-area networks, said Ed Cirella, national sales manager of Data Switch's T-Bar Division, based here.

The switch is a board-level component that resides in a rack enclosure called the Master Control Module, which houses as many as 20 Variswitch units.

The product uses a 16-bit Intel Corp. 80C198 microprocessor to scan attached fiber lines for power levels. It figures out the average line power and if the line dips below that average or if the line fails, an automatic restoral feature cuts over to the alternate fiber link.

Cirella said the switch responds to a failed or deteriorating line by cutting over to the backup within 15 msec of detecting the fault. It is typically positioned between the local fiber links and a multiplexer or router.

Each Variswitch has six ports to support multimode and single-mode fiber connections. The device is a passive switch, meaning it does not convert optical light pulses to electrical signals and then back again. Support for optical data provides for more efficient data transmission, he said.

The Master Control Module enables users to attach a personal computer or terminal to monitor and control the Variswitches. The module provides one port for a local management console and a second port so a user can dial into the Master Control Module to receive status updates.

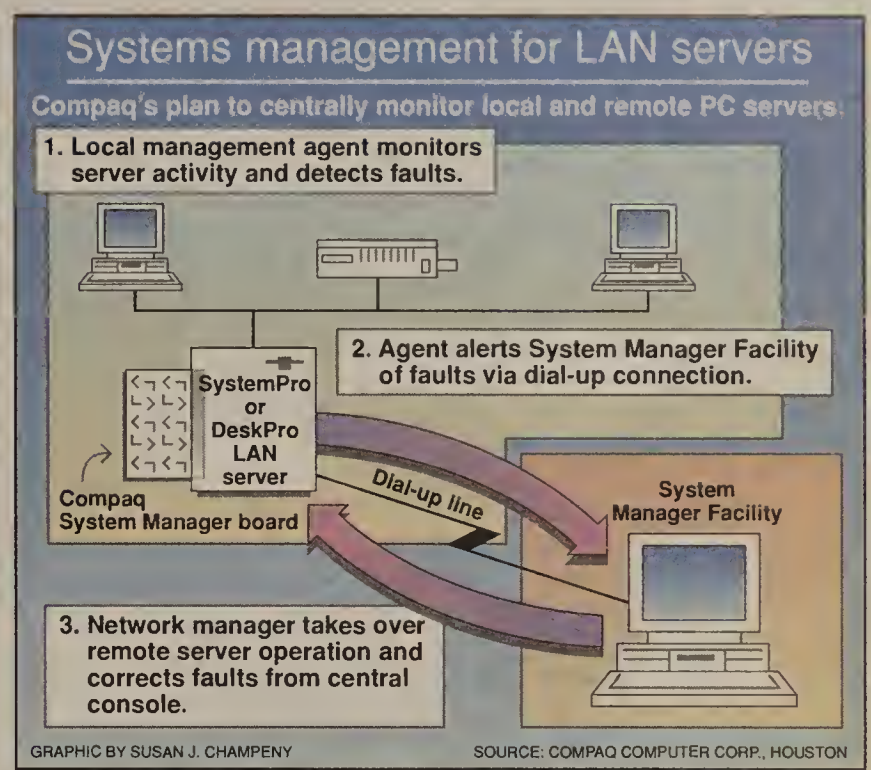
Patch panel replacement

According to Cirella, the switch would serve as an alternative to LAN patch panels, in which lines must be physically switched in the event of a cable failure. In that setup, a network could be down an hour or more.

"A 15 msec outage is still an inconvenience, but the user gets his service back a lot faster," Cirella said.

The Variswitch Fiber Optic Switch System costs $5,000 with the autorestoral feature or $2,500 without it. Both models will ship in the fourth quarter.

Data Switch's T-Bar Division can be reached at 1 Enterprise Drive, Shelton, Conn. 06484, or call (203) 926-1801.



Compaq unveils LAN systems mgmt. tool

Compaq System Manager centrally controls EISA servers via a dial-up connection from LAN sites.

HOUSTON — Compaq Computer Corp. this week will announce a systems management tool capable of monitoring and controlling personal computer-based servers and gateways on a local-area network.

Compaq System Manager enables LAN administrators to centrally control Extended Industry Standard Architecture (EISA) bus SystemPro and DeskPro computers spread across a network or in remote offices.

The product will appeal to LAN administrators who are downsizing minicomputer applications to run on a LAN or to LAN users trying to gain control over rapid network expansion, according to Compaq officials.

System Manager consists of a 32-bit EISA board that resides on a server and acts as a management agent, gathering systems statistics and comparing activity to a menu of predefined threshold limits.

Compaq also provides customers with management console software, called System Manager Facility, which enables a LAN manager to receive alerts and take remedial action at a central location.

Should a server condition exceed threshold limits, the local management agent will alert the LAN administrator via a dial-up telephone connection.

The primary component is the EISA board that comes with operating system drivers and a 2,400 bit/sec modem. Also, an on-board nickel cadmium battery enables the personal computer host to continue to dial out to the System Manager Facility in the event the host loses power.

The board also comes with built-in temperature and voltage sensors to gauge environmental conditions, which can be reported to the System Manager Facility.

In addition, the board tracks other conditions, including power supply outputs, memory usage and disk drive allocation. The product can also interface to the host unit's operating system in order to check memory allocation status, for instance. This feature enables the LAN administrator to diagnose operating system problems as well as hardware faults.

The System Manager Facility is software that resides on a Compaq personal computer dedicated as the management console. The Microsoft Corp. Windows-based software enables the user to view device status, set thresholds on remote units, configure alert destinations and log alerts.

The System Manager provides several layers of alert notification in the event a server condition triggers a fault response. It feeds an alert to the System Manager Facility via a dial-up connection and can require user acknowledgments within a predefined time frame. Otherwise, the product will redistribute the alert to another user on a list of contacts until it receives an acknowledgment.

Furthermore, the System Manager can send alerts to some

(continued on page 38)

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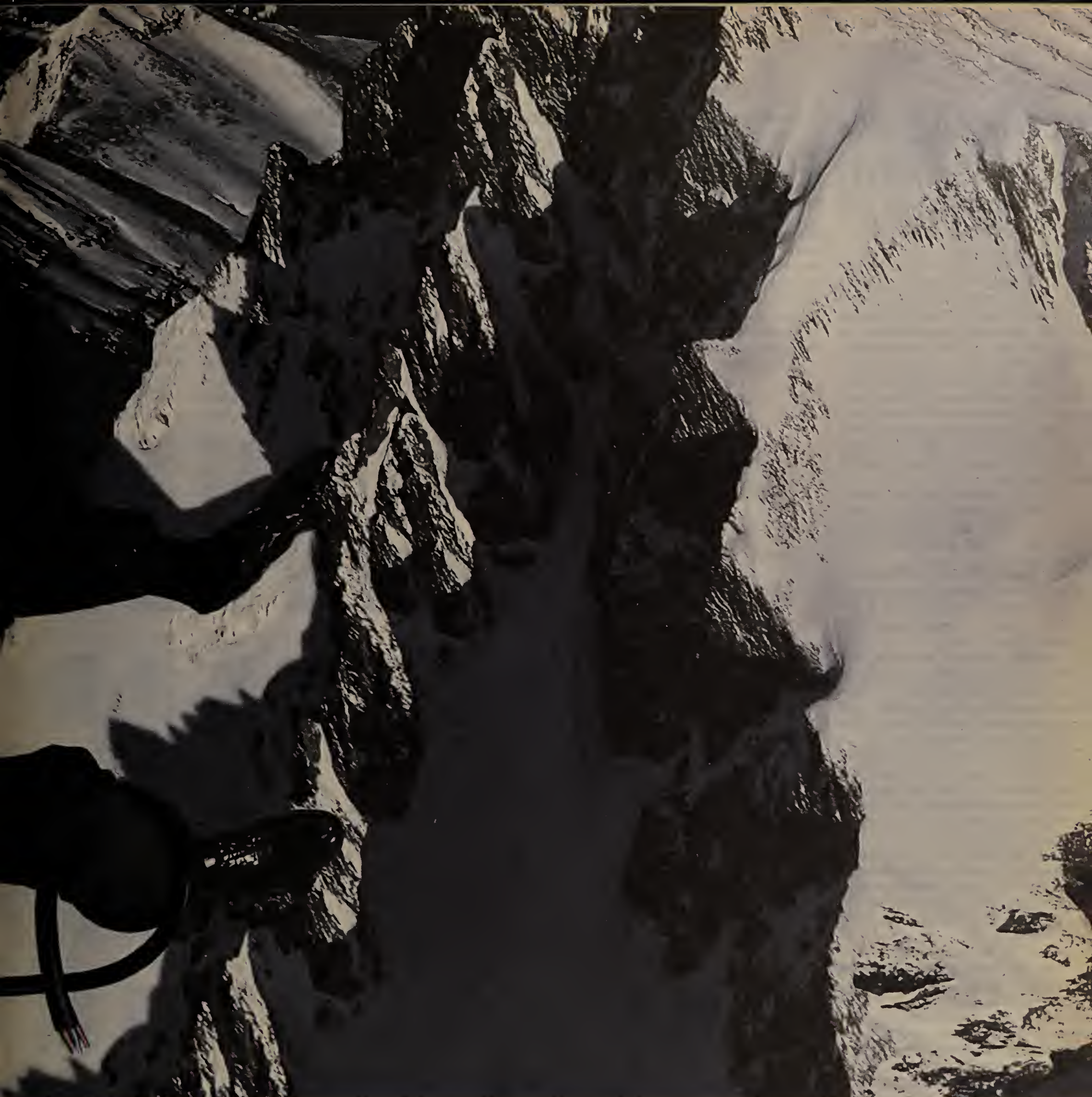

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Castelle upgrades FaxPress server, slashes price

SANTA CLARA, Calif. — Castelle Corp. last week unveiled major enhancements to its FaxPress LAN facsimile server and cut the price of the unit by $900, bringing it in line with personal computer-based fax servers that offer less base functionality.

FaxPress Version 2.2 now comes with full support for Novell, Inc. NetWare print servers, expanded support for high-quality printers and enhanced fax directory utilities, which simplify the process of updating or adding user fax profiles. The company also announced a two-line model of its FaxPress unit.

Support for NetWare print servers within FaxPress lets printers attached to a FaxPress serial or parallel port support multiple servers and print queues on the local-area network.

The print server feature essentially makes a printer connected to the FaxPress available to all clients on the LAN. It supports as many as 32 print queues from eight file servers.

Until now, FaxPress supported some NetWare print server features, but not advanced functions such as banner pages. Castelle integrated support for its LANpress print server into FaxPress to offer NetWare print server support.

Improvements in the fax phone directory make it easier to import and export fax phone lists, which helps synchronize fax directories across multiple sites. The enhancement also simplifies list management and printing.

A new Fax Alert option signals users on the network via a pop-up window that a fax has arrived or indicates the status of an outgoing fax. The feature could also be used to alert a fax supervisor to the arrival of any incoming fax.

Castelle Fax Manager software, which runs on the FaxPress, also comes with automated housekeeping tasks and improved access to stored fax files. In addition to the previous supervisor, operator and user definable privileges for users, a new router privilege allows for viewing of only the first page of a fax. Another new option prints a local confirmation copy of an outgoing fax.

Castelle said it is also now possible to delete active fax jobs and to delete pending queued printing.

Printer support

FaxPress Version 2.2 also supports Hewlett-Packard Co. Printer Control Language or PostScript printers for fax printing and comes with support for 300 fonts. New fax phone directory utilities simplify the process of updating or adding user profiles.

All software upgrades are available at no extra charge to customers covered by a Castelle maintenance agreement or extended warranty. Customers may purchase an extended warranty for $600.

Castelle also cut the price of FaxPress Version 2.2 from $4,395 to $3,495, which makes it more competitive with personal computer-based fax servers.

Robert Spivack, a marketing manager at Castelle, said the price cut makes FaxPress more cost-effective because users get network interfaces and features such as Microsoft Corp. Windows and PostScript printer support, already built into the product rather than having to add those on, as is the case with personal computer-based fax servers.

The company also announced a two-line FaxPress model that comes with automatic load balancing between lines and simultaneous faxing of documents of the two lines. Optionally, a user can designate one line for incoming faxes and the other for outgoing data.

The new FaxPress two-line model costs $4,395 and is available now.

For further information, contact Castelle at 3255-3 Scott Blvd., Santa Clara, Calif. 95054, or call (408) 496-0474.

Compaq unveils LAN systems mgmt. tool

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pagers, and a voice synthesis feature allows the product to deliver alerts by telephone to designated personnel.

In addition to delivering alerts, the System Manager provides the LAN administrator with the capability to respond to the alerts.

A built-in remote console emulation feature enables LAN administrators to take over a remote console and perform tasks as if they were logged on to the local device. Using this function, users can cold-boot systems or alter systems configuration parameters.

One initial drawback to the System Manager is that it does not support direct LAN connections to a host with the management agent. Instead, users must use dial-up lines to establish a connection with the management agent.

"We figured users would want an out-of-band, dial-up method for backup purposes anyway," said Caroline Kirkland, a product analyst at Compaq.

The company hesitated to provide direct LAN support because it had not decided whether that support should be tied to the Simple Network Management Protocol or a separate approach Novell, Inc. is pitching for its NetWare LANs.

Compaq is working on direct LAN support, according to Kirkland, but she de-

clined to provide a timetable for delivery of that feature.

Initially, the System Manager will be supported in Banyan Systems, Inc. VINES, Microsoft's LAN Manager, Novell's NetWare and The Santa Cruz Operation, Inc.'s SCO Unix System V/386 environments.

Kirkland said the System Manager can be used alongside network management packages running on a DOS-based personal computer.

The System Manager costs $2,999, which includes the EISA board, operating system drivers and System Manager Facility software. It is available now.

For further information, contact Compaq at P.O. Box 692000, Houston, Texas 77269, or call (800) 345-1518.

Microcom to intro router, V.32 modem

continued from page 35

ware support for X.25 packet-switched WAN links. Each of the four WAN interfaces on the MBR 6500 can support 15 virtual circuits, enabling the box to support a maximum of 60 virtual circuits.

Both the MBR 6000 and the 6500 enable customers to optimize use of the WAN links/circuits by supporting 4-to-1 compression. Foley said customers with applications running at 9.6K bit/sec can achieve throughput of up to 40K bit/sec. Users with 56K or 64K bit/sec X.25 WAN links can achieve throughput of 256K bit/sec. A 500K bit/sec fractional T-1 circuit can provide 2M bit/sec of throughput.

The bridge/routers support a Simple Network Management Protocol agent, so the devices can be managed from the company's own Microcom Management Station or another vendor's management station. Microcom's management product enables users to display router and bridge statistics and remotely configure, troubleshoot and track MBRs.

Microcom will begin shipping the MBRs to authorized resellers this month. It lists the products at prices ranging from $3,499 to $6,499, depending on configuration. Turnkey MBRs that come with an Intel Corp. 80286-based microcomputer range in price from $4,999 to $7,999.

Customers with Microcom LAN Bridges can upgrade the products to support MBR routing at a cost of $449.

The other product announced last week was the QX/4232bis, a V.32bis modem that supports the company's Microcom Networking Protocol (MNP) 10.

Like other V.32bis modems, the QX/4232bis supports speeds up to 14.4K bit/sec over dial-up or leased lines and, using V.42bis data compression, effective throughput up to 38.4K bit/sec.

According to the company, the QX/4232bis is different from other V.32bis modems in that the use of MNP 10 enables the modem to maintain high throughput by providing a way for the modem to step up to higher speeds after it steps down to accommodate degrading line conditions.

The V.32bis standard defines how devices step down but doesn't allow recovery in the event that line conditions improve.

The QX/4232bis is available now and costs $999.

Microcom can be reached at 500 River Ridge Drive, Norwood, Mass. 02062, or call (617) 551-1000.

First Look

continued from page 35

Computer, Inc. Macintosh microcomputers that supports the emerging Switched Multimegabit Data Services (SMDS) that local telephone companies are launching. The interface enables applications written for Apple's AppleTalk nets to communicate transparently over high-speed SMDS links.

The board, which occupies one NuBus I/O slot on the Macintosh II system board, is compatible with SMDS services as specified by Bell Communications Research. It supports SMDS links at speeds up to the T-1 rate of 1.544M bit/sec full duplex. The board is available 60 days after receipt of order and costs $2,999.

Multiaccess Corp., P.O. Box 789, Goleta, Calif. 93116; (805) 964-2332.

Avanti Technology offers network monitor for NetWare servers

Avanti Technology, Inc. (formerly Meyer & Associates) recently unveiled **NetTrack,** a network management tool for Novell, Inc. NetWare local-area networks that determines server utilization.

NetTrack runs on NetWare 286 file servers and monitors server performance in real time, generating historical reports on server utilization, cache hit ratios, concurrent open files, concurrent open indexes and active connections. The vendor said it provides more in-depth data than NetWare's FCONSOLE capability.

The software also monitors file system and I/O criteria, such as file open and read requests, file write requests, physical disk read operations and physical disk write operations. The tool tracks the number of packets received and discarded by a server, including the Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX), Network Basic I/O System and Routing Information Protocol.

NetTrack records the activity in a file log, which can be printed or reviewed.

NetTrack Version 1.0 is available now and costs $195 for a site license.

Avanti Technology, Inc. 13740 Research Blvd., Austin, Texas 78750; (512) 335-1168.

OPINIONS

CELLULAR SERVICES

BY EDWARD HORRELL

Why are cellular services a wasteland?

The best telephone service that could be offered — cellular telephone service — is going to waste right under our noses.

In spite of the small number of businesses that have benefited from it, cellular phone service continues to be a convenience that has found little application for business users.

Why can't we have a cellular service that allows business users to have one phone number for mobile, business and home use — one telephone, used behind a cellular private branch exchange, which becomes the personal telephone after hours?

The technology is available to provide this type of service. But don't expect to see it happen anytime soon. The reason is a conflict of interest that will restrict the growth of cellular services in the business arena for a long time.

> Cellular telephone service is going to waste right under our noses.
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In most states, cellular service is provided in major areas by two companies. One of these, known as the wireline company, is owned and operated by the local exchange carrier. The other company can either provide competing service or sell the right to provide cellular service in that territory to another firm. Here's where the conflict begins. Take a look at who owns these nonwireline companies: independent telephone companies, with GTE Corp. being the largest.

With an investment of billions of dollars in plant to provide wireline-based services and with this investment depreciating slowly, how motivated are the large wireline carriers to obsolete the cable technology they currently use and base all or most of their communications on wireless? Some people in the industry — most notably the Massachusetts Institute of Technology Media Lab's Nicholas Negroponte — think that all communications we currently receive by wire (voice, local-area network and the like) should be completely changed over to wireless and all communications we receive by broadcast (television, radio) should be changed over so that we could receive them on a wire. But given the situation in the industry today, how likely is that to happen? Not very.

As long as the cellular industry is controlled by the operating companies and others with a vested interest, business users can count on an emphasis on assets as opposed to one on service, as well as slow implementation of new applications and less emphasis on marketing and sales. Protecting their profit margin is more important to these companies than providing good customer service or innovative business applications.

Some industry experts I've spoken with can think of little in the way of new applications for cellular service that will be introduced within the next five years. The market for cellular service is estimated, by these same experts, to have reached a saturation point of only 3% to 4%, based upon the percentage of telephone users using cellular service.

The solution is simple but unlikely. Somebody with big bucks and no previous investment in public nets should start buying the locations out. We would then see the applications begin to spread and the wireline carriers duking it out with the nonwireline carriers. Yet applications and technical developments will wait until more people use the vanilla service, which should be the future of telecommunications in this country. But that future won't be upon us soon. And that's a shame.

Horrell is president of The Horrell Consulting Firm, Inc. in Memphis, Tenn., and a member of the Society of Telecommunications Consultants.

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EDITORIAL

Enter the 7th Annual User Excellence Awards now

Perhaps some of you have been reluctant to enter *Network World's* Seventh Annual User Excellence Awards because you don't want to blow your own horn. To that we say: Modesty is a wonderful quality, but it's rare in winners.

And winning can confer tangible benefits. Consider this from a top network executive with one of last year's User Excellence Award cowinners: "The award has allowed us to get projects approved by top management far more easily," says William Spies II, divisional vice-president of First National Bank of Maryland.

Spies believes the public recognition generated by the award has contributed to his department's credibility with senior executives, speeding approval of new and more sophisticated network projects.

The User Excellence Award offers a rare opportunity for acclaim and recognition of a user's innovation and expertise in applying technology. The networking efforts of award winners will be spotlighted in the features section of this newspaper, and the awards will be presented at a special ceremony during the Communication Networks Conference in January 1992.

Network World's User Excellence Awards were the first user-oriented awards granted in networking, and they continue to be the most notable mark of achievement in the field.

No other award honors users — and users alone — for strategic networking: the creation and operation of a network that makes a significant contribution to the organization's basic mission.

The awards have honored such companies as American Airlines Decision Technologies, American Express Travel Related Services Co., CSX Technology, Dow Jones & Company, Inc. and Sears Technology Services.

Applications are still being accepted for this year's competition, but there isn't much time left before the Sept. 12 deadline.

Here's how to enter: Write a 250- to 500-word abstract describing your network and how it has helped your organization achieve strategic goals.

You can use the entry form that appears on page 64 of this issue or submit your entry in some other format. Mail it or send it by overnight courier to Editor, Network World, 161 Worcester Road, Framingham, Mass. 01701. You may also send your application by facsimile to (508) 820-3467.

OPINIONS

INDUSTRY COOPERATION

BY JOHN MCQUILLAN

Illustrating the best approach to vendor collaboration

These days, communications trade publications are full of stories about large numbers of companies banding together in "clubs," many of which have been formed for purely competitive reasons. And, of course, once they've formed, a similar "anticlub" often forms to combat the influence of the first.

For example, the Open Software Foundation was developed in response to the combined market power of AT&T and Sun Microsystems, Inc.

Such industry rivalry has been quite destructive in the networking business.

Even the trend toward open systems can sometimes be perverted by intense industry rivalry. It's funny to hear vendors say, "My system is more open than your system." After all, "open" is an absolute, not a relative, term.

But the recently formed Frame Relay Forum is different. There will not be two competing frame relay forums, and there will not be two styles of frame relay. The Frame Relay Forum reminds us that there is a better way for leading industry vendors to collaborate.

A lesson in history

Only two years ago, many readers of this newspaper, and indeed most of the vendors involved in frame relay today, had never even heard of the technology. The tale of how this development took the industry by storm provides users with insight into how new developments will succeed or fail in the communications industry.

Not long ago, the telephone community recognized that it would be necessary and desirable to carry voice and data on the same network, and that an integrated solution — Integrated Services Digital Networks — should be developed. But the ISDN standard didn't lead to ISDN products, and unfortunately, users tended to consider ISDN a voice-only solution. So the carriers went back to work and created a related standard for data, which they called ISDN Frame Relay.

However, this ISDN standardization effort was overtaken along the way by other activities in broadband ISDN on the part of both carriers and the Consultative Committee on International Telephony and Telegraphy. Most significantly, the carriers got busy with a new initiative — looking into Asynchronous Transfer Mode for cell relay — and they tended to ignore frame relay.

> Frame relay is good for the industry, and the forum has been organized to ensure that frame relay progresses in an orderly manner.
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Meanwhile, the efforts of a small group of customer premises equipment vendors, working within the ANSI standards bodies and other organizations, led to a nearly complete set of worldwide frame relay standards in a short period of time.

Several companies, including Cisco Systems, Inc., Digital Equipment Corp., Northern Telecom, Inc. and StrataCom, Inc., then began working on a small set of extensions to the international standard version of frame relay that would ensure that those vendors' implementations were interoperable. These extensions became known as the Local Management Interface (LMI) specification.

What happened next was, in my opinion, of great significance. The combination of solid industry standards and the proposed LMI extensions triggered an industry ground swell, as a large group of companies became interested in a common interoperable solution for high-speed and high-efficiency networking.

This group, which became known as the Frame Relay Forum, is now working on the remaining details in their technological sphere, such as multicast, encapsulation and other functions. They are also working to establish interoperability guidelines in other areas, such as marketing and public awareness.

The Frame Relay Forum has been formed because standards are necessary but not sufficient. We need collaboration among all vendors to ensure that implementations of standards are interoperable and that any extensions to the standards are made with the best interest of the entire industry in mind.

Finally, the Frame Relay Forum is noteworthy because it is not an anticlub. Frame relay is good for the industry, and the forum has been organized to ensure that frame relay progresses in an orderly and uniform manner.

The work that comes out of the forum will be submitted to the international standards bodies. Thus, we see a synergistic relationship between the standards and the industry bodies. The frame relay activity that began in the CCITT and ANSI standards groups was continued in cooperative discussions at the forum and will now go back to standards bodies for formal ratification.

The activities of the Frame Relay Forum thus far represent a new model for how vendors should conduct business in times of rapidly changing technological developments and intense competitive pressures. Hopefully, other groups in the network industry will follow its lead.

McQuillan is president of McQuillan Consulting in Cambridge, Mass. He assists users and vendors in planning communications systems.

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TELETOONS

BY FRANK AND TROISE

LETTERS

Setting national priorities

Regarding the recent opinion piece by James Kobielus ("The vision of a national research net needs rethinking," *NW,* Aug. 19), nothing could be farther from the truth. In fact, recent developments in Japan and Europe demonstrate that the U.S.' lead in telecommunications systems is narrowing as other countries adopt strategic goals in communications and make commitments to their achievement.

Is it too much to ask the U.S. to concentrate on the creation of a first-rate research net to support its $150 billion-a-year public and private research enterprise? Can we afford $92 million a year, the amount proposed in President Bush's fiscal 1992 budget, for the National Research and Education Network?

We can, but it requires the single-minded dedication that, for the past 10 years, has turned the Internet from an obscure laboratory effort into one that connects thousands of university and research sites with hundreds of thousands of network computers for several million users.

The challenge is clear. As George Gilder, senior fellow at the Hudson Institute, put it in his testimony at the Federal Communications Commission hearings on advanced networks in May, the next 10 years will see a millionfold increase in the performance of microcomputers. We can do the hard work to research gigabit and terabit fiber-optic networks and put them to work harnessing this awesome power, or we can watch others do it and reap the rewards.

Michael Roberts
Vice-president of networking
Educom Networking and Telecommunications Task Force
Washington, D.C.

Network World *welcomes letters from its readers.*

Letters should be typed and double-spaced. Mail them to Editor, Network World, *161 Worcester Road, Framingham, Mass. 01701.*

Letters may be edited for space and clarity.

WHY HONGKONGBANK FINDS GDC A CAPITAL INVESTMENT.

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This proved to be an exciting challenge as the backbone network supports applications spanning 35 countries and 37 carriers. Given the scope of this enterprise, efficiency and reliability are critical. HongkongBank discovered that GDC's superior performance provided the most efficient use of bandwidth. And that's important for sophisticated applications such as electronic funds transfer, dealer boards, wire services, fax and automatic teller machines. And because reliability is so important, GDC ensures that HongkongBank has round-the-clock worldwide support.

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Bypass carriers grow up

CONTINUED FROM PAGE 1
cated in major urban areas (see chart, beginning on page 48). But within those areas, they provide a real full-service alternative to the local telephone company.

Users are spreading their traffic more evenly between the competitive local carriers and the established local exchange carriers. This distribution helps ensure maximum line availability, improves reliability and keeps each carrier aware that there is competition for the traffic.

The cost of using a competitive local carrier can be more or less expensive than using a local exchange carrier, depending upon the area covered, the services used, the amount of traffic and the terms of the contract. Many competitive local carriers are quite willing to bargain with users — a practice from which established local exchange carriers are usually restricted by law.

As competition in the local market becomes even more intense, users can count on more options for a greater range of services from all parties. In fact, many cities have multiple competitive local carriers as well as an established local exchange carrier. New York has at least three competitive carriers; Chicago has five; Boston, Los Angeles and San Francisco have four or more apiece; even Rochester, N.Y., has two competitive local carriers, plus the local exchange carrier.

Who are these guys?

Users are to be forgiven if they're still not sure what to call these carriers. After all, even the top people at the leading competitive carriers haven't settled on a single appellation. Bob Atkinson, senior vice-president for regulatory and external affairs for Teleport Communications Group, one of the two largest competitive local carriers in the U.S., recently offered a $100 reward for the most appropriate name to attendees at one conference.

The name "alternative access

(continued on page 45)

Briere is president of TeleChoice, Inc., a Montclair, N.J., telecommunications consultancy specializing in long-distance service analysis and network design. He can be reached at (201) 746-0200.

CHART • GUIDE

A Buyer's Guide chart comparing competitive local carriers and their services begins on page 48.

Local exchange carriers face some stiff competition from competitive local carriers.

ISDN Plug n' Play

Now you can have instant compatibility to 5ESS or DMS-100 central offices.

By simply plugging in Fujitsu's feature cartridge, now anyone can make our SRS®-2000 digital phone set compatible to 5ESS® or DMS™-100 Basic Rate Interface.

This revolutionary approach to desktop ISDN compatibility offers you a better alternative to buying proprietary equipment from your switch supplier. What's more, Fujitsu's unique cartridge design helps protect your equipment investment by providing simple "plug n' play" access to ISDN upgrades as standards evolve.

Fujitsu's full line of desktop ISDN products, including the SRS-400/410 Terminal Adapter and SRS-1050 digital set, feature the replaceable cartridge and support the V.120 rate adaption standard to put you on a path towards an open ISDN architecture.

World class products with advanced features like these are the result of 10 years of practical ISDN experience and over 50 years of telecommunication experience that only Fujitsu, a $20 billion global company can deliver.

For more information on Fujitsu's ISDN Plug n' Play desktop products call Fujitsu Network Switching at 800-228-ISDN.

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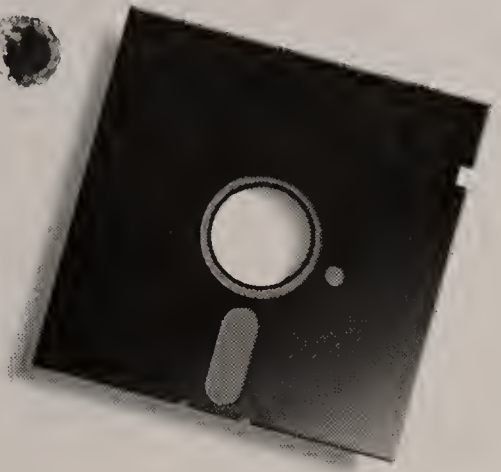

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carriers" has been suggested many times, but this no longer fits.

"You don't hear MCI and US Sprint referred to as alternative long-distance carriers anymore," says L. Thomas Walton, president of Walton and Walton Associates, an industry consulting firm in Richmond, Va. "At some point, competitors reach a level of equivalence, and that's happened in the local arena."

Historically, competitive local carriers have provided some sort of alternate telecommunications services for local customers. In the past, such service was typically limited to private lines that offered alternative access to the user's long-distance service provider's point of presence (POP). Today, competitive local carriers provide a host of services that rival even those of the largest local exchange carriers.

Why use them?

Users turn to competitive local carriers for services that are either unavailable from an established local exchange carrier or are less expensive than a local exchange carrier's similar offering. Also, competitive local carriers are often a preferred choice for a user's disaster recovery plans.

Many users look to competitive local carriers for services that complement those provided by the local telephone company.

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Competitive local carriers typically offer top-quality digital services at prices close to — or lower than — the local exchange carriers. Where competitive local carrier rates are higher, it is typically because customers perceive the competitive local carrier service to be of better quality.

In addition, the relatively small competitive local carrier can often provide faster, more efficient customer service than the local exchange carrier.

The monopoly origins of local exchange carriers also work against them in terms of flexibility. In most markets, competitive local carriers can make any deal they want with any customer. A few states, such as Massachusetts, require all registered carriers to file tariffs for services.

This flexibility allows competitive local carriers to develop and offer innovative services that local exchange carriers simply cannot. For instance, most local exchange carriers are required by local regulation to cost-justify any proposed service.

Competitive local carriers rarely face these restrictions and, thus, are more easily able to install fiber loops wherever they can get the right-of-way, provide fractional DS1 and DS3 service or even combine several types of service into a single, custom network contract for a single user.

The clientele for competitive local carriers reads like a Who's Who of telecommunications users and providers. Interexchange carriers remain the largest single customers of most competitive local carriers, which provide links between POPs and user access lines (see graphic, page 46).

Other typical users are large companies with extensive local telecommunications needs, such as banks, investment companies, brokerage houses and information services providers. For example, Quotron Systems, Inc., which is the information services subsidiary of Citicorp, is a major customer of Metropolitan Fiber Systems, Inc. (MFS).

Many users look to competitive local carriers for services that complement those provided by the local telephone company. They don't necessarily expect to use competitive local carriers exclusively; in fact, few do.

Fidelity Telecommunications Co., a subsidiary of Fidelity Investments, Inc. in Boston, provides telecommunications services to its parent company, which also has a stake in Teleport's Boston operation. Fidelity Telecommunications uses Teleport's fiber-optic facilities in metropolitan Boston to connect local offices in seven buildings. The company extensively uses fiber- and copper-based services from the local exchange carrier, New England Telephone and Telegraph Co.

Fidelity Telecommunications uses Teleport to achieve balance and reliability in Fidelity Investment's network, says Bill Maybaum, president of Fidelity Telecommunications.

"The critical issue is availability," he says. "We're trying to keep the network balanced and use the latest technology available, while ensuring high availability. Using two carriers allows us to do this."

Maryland Casualty Co. in Baltimore, a large user of MFS' services, uses a redundant T-3 fiber circuit in a relay from their main data site to the local MFS POP and then to the local AT&T POP, a distance of about 15 miles.

MFS built, owns and operates Maryland Casualty's entire system. The local telephone company, the Chesapeake and Potomac Telephone Co. of Maryland, was not interested in building such a circuit, says Ed Cummins, telecommunications manag-

(continued on page 46)

(continued from page 45)
er at Maryland Casualty.

The insurer has been using the circuit for nearly two years and has reported no problems, Cummins says. The company has a five-year contract with MFS to use the circuit.

Pick a service, any service

In most areas, these carriers provide digital services over a local fiber loop. Some carriers are using other technologies — such as digital microwave — to provide alternative transmission. New York-based Local Area Telecommunications, Inc., for instance, is a well-known provider of microwave services in Boston, Chicago, Detroit, New York and Washington, D.C.

Most competitive local carriers offer a basic range of digital services, including:

- DS0, DS1 and DS3.
- Digital data services (56/64K digital data service).
- Fractional DS1.
- Fractional DS3.

The competitive local carriers are also unveiling new, technologically advanced services to help them keep pace with, or even outstrip, services offered by local telephone companies.

One example is Centrex-type services offered by Teleport in New York. A subsidiary of Teleport, TC Systems, Inc., owns and operates two AT&T 5ESS switches in Manhattan. These switches provide customers with "shared tenant services," which are functional Centrex services, according to Teleport's Atkinson.

MFS and Columbus, Ohio-based MetroComm, Inc. are the only other competitive local carriers surveyed that plan to introduce Centrex services soon.

> Most competitive local carriers offer a basic range of digital services, including DS0, DS1, DS3 and fractional DS1.
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Other innovative services include:

- E-1 interconnect. As more U.S. firms do business with firms in Europe and other countries that subscribe to the Conference Europeenne des Postes et Telecommunications standards, E-1 support is becoming more important. While multiplexers are available that automatically convert North American DS1 to E-1 signals and vice versa, many users are finding it simpler and more convenient to link directly to interexchange and overseas carrier E-1 services using competitive local carriers.

According to the carriers, only three of them currently offer E-1 service: Institutional Communications Co. of McLean, Va., MFS and Teleport.

- Fractional DS1 and DS3 service. Almost all competitive local carriers researched offer fractional DS1 service; most also offer fractional DS3. These are usually offered as adjunct services; in other words, services offered simply because the carrier has the ability to provide them. Relatively few customers actually take advantage of the fractional services.

Bob Mercier, Teleport's vice-president of corporate development, sees the largest customers using full T-1 pipelines with their own channel banks, rather than having the carrier split the T-1 pipeline up for them. Fractional services tend to be used by customers with less sophisticated networks, Mercier adds. Other carriers agree.

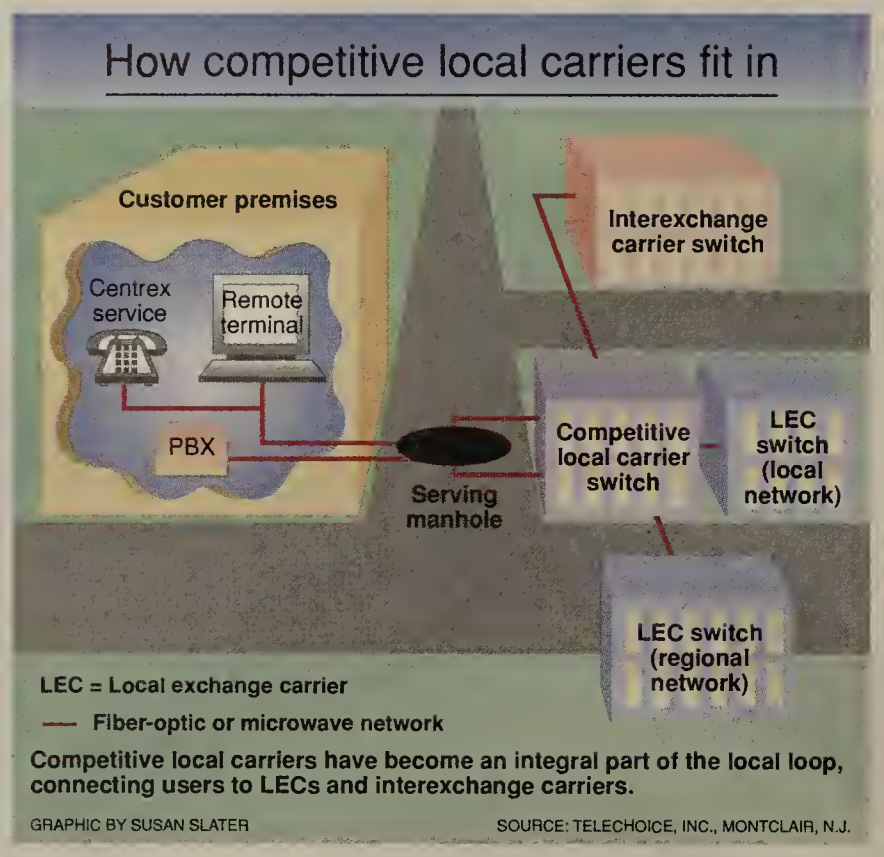
- High-speed interconnectivity. Several competitive local carriers offer high-speed services designed for connecting local-area networks with other LANs, wide-area networks or transaction processing systems. Some of these services are designed specifically to match LAN data rates. For instance, Electric Lightwave, Inc. of Portland, Ore., offers 10M and 16M bit/sec service designed for LAN interconnection.

Just last month, MFS introduced a 100M bit/sec metropolitan-area service designed for interconnecting remote LANs and other high-speed data service connections ("MFS service to link LANs at FDDI speed," *NW*, Aug. 19).

Other competitive local carriers in the chart that offer 100M bit/sec Fiber Distributed Data Interface services, Synchronous Optical Network (SONET)-based services or both are Diginet Communications, Inc. of Chicago (FDDI); Electric Lightwave (SONET, FDDI); FiberNet, Inc. (FDDI) and Intermedia Communications of Florida, Inc. (100M bit/sec service for LAN links and other applications).

- Video. Most carriers offer services, in increments of 56K or 64K bit/sec, that can be used to support videoconferencing or any other application needing similar increments of bandwidth. Some carriers provide video-specific services. Intermedia, for example, has marketing agreements with videoconferencing vendors and can provide users with a complete turnkey videoconferencing system including leased lines, leased video equipment and assistance in designing the videoconferencing system and network (typically using 384K to 768K bit/sec pipes).

Other carriers with video offerings include MetroComm, which offers transport for compressed video signals via T-1 circuits; and City Signal of Grand Rapids, Mich., which offers two-way, interactive videoconferencing services in its main service area, as well as video gateways to US Sprint's Meeting Channel service and uplink/downlink access to local Teleport facilities. City Signal also provides so-called "distance learning" services that carry video transmissions to and from local high schools and colleges.



Competitive local carriers have become an integral part of the local loop, connecting users to LECs and interexchange carriers.

GRAPHIC BY SUSAN SLATER SOURCE: TELECHOICE, INC., MONTCLAIR, N.J.

Network management

Network management, a hot topic with users, presents its own challenges for competitive local carriers. While the long-distance carriers have become quite sophisticated in their provision of network management capabilities to customers for the part of the network they control, the local loop has long been a problem because the interexchange carriers have no control over those facilities.

Management facilities from the Bell operating companies have been lacking, further compounding the problem.

Some competitive local carriers are allowing customers access to their internal systems for customer-controlled or customer-involved network management. MFS, for example, provides at least a basic level of network monitoring and reconfiguration services for users in the 11 cities where it does business.

The service allows customers to directly access MFS network control systems via a personal computer, using either a dedicated or dial-up line. Currently available management functions include network rerouting for disaster recovery and remote testing of user circuits.

In Chicago, Dallas, New York and San Francisco, MFS is rolling out a bandwidth-on-demand feature, which makes bandwidth available to customers in 56K bit/sec or DS1 chunks. The feature will be available in other cities as MFS installs the necessary hardware and software.

Currently, we know of no other competitive local carrier that offers similar management connectivity and functions. In fact, of all the major local exchange carriers, only New York Telephone Co., with its Allink service, offers similar management capabilities at this time.

Teleport is investigating the development of similar management functionality but does not have plans to offer the services to customers. Teleport's Atkinson says the carrier would likely offer such functionality to its interexchange carrier customers first, if and when it is developed.

Teleport currently offers some customer network reconfiguration capabilities using digital access and cross-connect systems (DACS). Under the Teleport system, the DACS is located in the local Teleport node. When a customer orders a DS1 circuit, the Teleport network management system accesses the customer network and the Teleport node. The DACS then cross-connects the circuit as needed.

Teleport says this system minimizes circuit turnaround time and enhances the carrier's ability to provision and test the circuits being used.

Finally, Intermedia offers a unique form of remote network management. The service is a help desk that users dial into using a personal computer and access via password. The user then presents the desk attendant with their LAN problem and releases control of the computer to the help desk attendant, who proceeds to walk the user through the necessary corrective action via remote control. No competitive local carrier offers a similar service.

Many users also sign on with a competitive local carrier to provide at least some level of disaster avoidance for their telecommunications systems.

Competitive local carriers typically offer redundant routing over multiple, separate circuits to geographically separate central offices or switching centers. Teleport's Digital Transport Facility service in New York, for example, can provide digital PBX customers with transport to separate New York Telephone central offices.

> Net management, a hot topic with users, presents its own challenges for competitive local carriers.
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Intermedia offers two disaster recovery services. The first is the Service Recovery System, which gives the user automatic access to Intermedia facilities at an alternative interexchange carrier POP in the event of a major interexchange carrier outage. The second is Access Assurance, which provides automatic access to the user's primary interexchange carrier POP in an alternative city should the interexchange carrier's local POP be inaccessible due to outages.

Other carriers offer different disaster recovery services.

Areas of influence

Usually, competitive local carrier services are provided in an urban area. However, service areas may include surrounding suburbs as well.

MetroComm, for example, provides services to the suburbs surrounding its service cities of Akron, Cincinnati, Cleveland, Columbus, Dayton and Toledo, Ohio. Some competitive local carriers use the networks of fellow competitive local carriers for origination and termination of traffic.

Often, the carrier will at least consider building a circuit out from the loop to reach a customer site if enough traffic exists to cost-justify the carrier investment or if there are enough potential customers along the circuit's path to justify the investment.

Maryland Casualty was in such a position with MFS. When MFS first built the line out to Maryland Casualty, the insurer was the farthest customer from MFS' Baltimore POP. Now MFS has other customers even farther from the POP.

Distance from the downtown

(continued on page 52)

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Competitive local carriers (continued on page 53)

Company	Metropolitan area	Year operational	Network composition	Route miles covered	Number of buildings covered	Carriers accessed	Services offered
ACC Corp. Rochester, N.Y. (716) 987-3000	Rochester	1986	80% digital microwave, 15% fiber, 5% copper cabling	160	9	Eastern Microwave, Inc.; MCI Communications Corp.; US Sprint Communications Co.; WilTel	DS0; DS1; DS3
Associated Communications of Los Angeles Los Angeles (213) 387-9271	Los Angeles	1989	50% fiber, 50% digital microwave	175	NA	AT&T; ComSystems; Execulines of California; MCI; Southern Pacific Telecommunications Co. (SP Telecom); US Sprint; West Coast Telecommunications; WilTel; all other major carriers available	DS1; DS3
Atlantic Communications Enterprises Atlantic City, N.J. (609) 641-8780	Atlantic City	1992	100% fiber	15 in Atlantic City, 55 connecting Atlantic City and Philadelphia	Approximately 20 planned	Access planned for most major carriers	DS0; DS1; DS3; DDS services; fractional DS1; fractional DS3; broadcast quality video transmission; satellite video up and down links
Bay Area Teleport Alameda, Calif. (800) 621-5003	San Francisco	1986	85% fiber, 15% digital microwave	300	25	AT&T; Cable & Wireless Communications, Inc.; Communications Transmission, Inc. (CTI); MCI International, Inc.; MCI Telecommunications Corp.; Metropolitan Fiber Systems, Inc. (MFS); SP Telecom; Teleport Communications of San Francisco; Telesphere International, Inc.; TRT/FTC Communications, Inc.; US Sprint; Western Telecommunications, Inc.; WilTel	DS1; DS3; customer interface rooms; operations and maintenance services; turnkey installation of microwave equipment; earth station complex for private satellite communications
City Signal, Inc. Kalamazoo, Mich. (616) 235-4990	Detroit	1990	100% fiber	5	4	Allnet Communications Services, Inc.; AT&T; US Sprint; MCI; Teledial America, Inc.	DS0; DS1; DS3; DDS services; fractional DS1; fractional DS3; interactive video
	Grand Rapids, Mich.	1990	100% fiber	100	100	Allnet; AT&T; US Sprint; MCI; Teledial America	DS0; DS1; DS3; DDS services; fractional DS1; fractional DS3; interactive video
Comtech Network Systems Group Ballwin, Mo. (314) 256-8268	St. Louis	1989	100% fiber	28	300+	AT&T; MCI; US Sprint; Long Distance Discount Service/Phone America	DS0; DS1; DS3; DDS services; fractional DS1; fractional DS3
Diginet Communications, Inc. Chicago (312) 663-8200	Chicago	1985	99.9% fiber, 0.1% digital microwave	5 in Chicago, 108 connecting Chicago and Milwaukee	14	Allnet, American ShareCom, Inc.; AT&T; CTI; Conference Call USA; Consolidated Network, Inc. (CNI); Contel ASC; Digital Signal, Inc.; Lightnet/WilTel; LiTel; Logicall Communique; Long Distance USA; MCI; Metromedia Communications Corp.; MidAmerican Communications Corp.; Midwestern Relay Co. (MRC); Norlight; Qwest, Inc.; Schneider Communications; Telesphere; US Sprint; WLI	DS0; DS1; DS3; DDS services; fractional DS1; dark fiber; FDDI
Diginet Communications, Inc. Milwaukee (414) 273-7731	Milwaukee	1989	99.9% fiber, 0.1% digital microwave	5 in Milwaukee, 108 connecting Milwaukee and Chicago	17	Allnet; American ShareCom, Inc.; AT&T; CTI; CNI; Conference Call USA; Contel ASC; Digital Signal; LiTel; Logicall Communique; Lightnet/WilTel; Long Distance USA; MCI; Metromedia Communications; MidAmerican Communications; MRC; Norlight; Qwest; Schneider Communications; Telesphere; US Sprint; WLI	DS0; DS1; DS3; DDS services; fractional DS1; dark fiber; FDDI
Digital Direct, Inc. Dallas (214) 744-0190	Dallas	1991	100% fiber	11.6	25	Action Telecommunications; AT&T; Cable & Wireless Communications; CTI; MCI; Metromedia Communications; National Telephone Service; Qwest; Teledial America; US Sprint; WilTel	DS1; DS3; DS3 hub; direct hub; DS3 from carrier to digital; DS1 distribution to designated locations
	Chicago	1991	100% fiber	18	132	Allnet; American ShareCom; AT&T; Cable & Wireless Communications; CTI; MCI; Metromedia Communications; Qwest; SP Telecom; Teledial America; Telesphere; US Sprint; Western Union Corp.; WilTel	DS1; DS3; DDS services; fractional DS3; analog services
Digital Direct, Inc. Seattle (206) 624-7767	Seattle	1991	100% fiber	17	33	Allnet; AT&T; General Communications, Inc.; MCI; International Communications Network; International Telecommunications Network, Ltd.; Metromedia Communications; Northwest Telecommunications Co.; US Sprint; WilTel	DS0; DS1; DS3; DDS services; fractional DS1; fractional DS3; video gateway
Eastern TeleLogic Corp. King of Prussia, Pa. (215) 337-8899	Philadelphia	1986	100% fiber	140	230	Allnet; American Longlines; AT&T; ATX Telecommunications Services, Inc.; Cable & Wireless Communications; CTI; Contel ASC; Digital Signal; Eastern Telephone; MCI; Metromedia Communications; National Telecommunications Network, Inc. (NTN); Qwest; Rochester Communications, Inc. (RCI); Telesphere; US Sprint; WilTel	DS0; DS1; DS3; DDS services; switched regional services; channelized DS1 and DS3 services; point-to-multipoint, DS1-to-DS0 and DS3-to-DS1 hubbing
Electric Lightwave, Inc. Portland, Ore. (503) 284-0000	Portland	1990	100% fiber	6	35	Allnet; AT&T; Cable & Wireless Communications; Diginet Communications, Inc.; McCaw Communications, Inc.; MCI; Metromedia Communications; Northwest Telecommunications; SP Telecom; TRT/FTC; US Sprint; Western Telecommunications; WilTel	DS0 (1991); DS1; DS3; DDS services; fractional DS1; fractional DS3; SONET-based services (OC-3, OC-12, OC-24, FDDI, 4M, 6M, 100M bit/sec); 10M and 16M bit/sec LAN connections and interfaces; collocation for carriers; DACS multiplexing services (DS1 to DS3, DS0 to DS1); dark fiber; nontransmission services including campus or building fiber/wiring; unique rights-of-way; fiber rings; self-healing alternate route protection; dual building/campus fiber entry
Electric Lightwave, Inc. Seattle (206) 441-8400	Seattle	1991	100% fiber	10	55	Allnet; American ShareCom; AT&T; Cable & Wireless Communications; Diginet Communications; McCaw Communications; MCI; Metromedia Communications; Northwest Microwave; Northwest Telecommunications; Pacific Telecom; TRT/FTC; US Sprint; Western Telecommunications; WilTel	DS0 (1991); DS1; DS3; DDS services; fractional DS1; fractional DS3; SONET-based services (OC-3, OC-12, OC-24, FDDI, 4M, 6M, 100M bit/sec); 10M and 16M bit/sec LAN connections and interfaces; collocation for carriers; DACS multiplexing services (DS1 to DS3, DS0 to DS1); dark fiber; nontransmission services including campus or building fiber/wiring; unique rights-of-way; fiber rings; self-healing alternate route protection; dual building/campus fiber entry
FiberNet, Inc. Rochester, N.Y. (716) 454-6990	Albany, N.Y.	1992	100% fiber	7.5	48	ACC Corp.; AT&T; MCI; US Sprint	DS0; DS1; DS3; DDS services; fractional DS1; fractional DS3; FDDI over dedicated fiber
	Buffalo, N.Y.	1991	100% fiber	9	42	ACC; AT&T; MCI; US Sprint	DS0; DS1; DS3; DDS services; fractional DS1; fractional DS3; FDDI over dedicated fiber
	Rochester	1991	100% fiber	8.5	46	ACC; AT&T; MCI; US Sprint	DS0; DS1; DS3; DDS services; fractional DS1; fractional DS3; FDDI over dedicated fiber
	Syracuse, N.Y.	1992	100% fiber	7	50	ACC; AT&T; MCI; US Sprint	DS0; DS1; DS3; DDS services; fractional DS1; fractional DS3; FDDI over dedicated fiber

DACS = Digital Access and Cross-Connect System
DDS = Digital data service
NA = Not applicable
OC = Optical Carrier
POP = Point of presence
SONET = Synchronous Optical Network

This chart includes a representative selection of competitive local carriers. Carriers not included may offer a full range of competitive services.

SOURCE: TELECHOICE, INC., MONTCLAIR, N.J.

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(continued from page 46)
loop is also a factor in the time it takes to get service from the carrier. A new customer in a building where the carrier already offers service can usually get connected in a week or two. An existing customer, in a building wired by the carrier, could obtain service in a matter of hours.

Customers not on or near the loop, whether they have accounts with the carrier or not, have a much tougher time getting service.

Depending on the location, the carrier and the services needed, it could take 30 to 90 days just to extend service four or five blocks from the existing loop.

Maybaum of Fidelity Telecommunications says he believes that New England Telephone is getting more creative in its communications services and its approach to customer service, partly in response to pressure from competitive local carriers.

"They are certainly responsive to the presence of other carriers in the market," he says.

Until a few years ago, Teleport could charge users prices as much as 19% over those of New York Telephone, due to Teleport's perception as a premium vendor.

Since then, Atkinson claims, New York Telephone has improved its services and quality, reducing prices to the point that Teleport now must match or exceed that carrier's discounts in most cases.

Jim Crosson, a spokesman for New York Telephone, says any improvements in customer service and decreases in pricing have resulted from customer requests and cannot be isolated as responses to increased competition.

"Certainly, competition is a matter of reality, but our great progress in this area has more to do with customer requirements," he says.

MFS pursued a different competitive pricing strategy. In its early days, the company offered services at lower prices than the local phone company charged. Now MFS can charge higher rates because it has established itself as a quality service carrier.

However, Royce Holland, MFS' chief executive officer, is quick to point out that while MFS rates may be higher than those of local phone companies in some areas or for some services, they are lower in others.

There is also growing competition between competitive local carriers themselves.

The two national heavyweights in the market, MFS and Teleport, find themselves competing quite closely in major markets such as Boston and New York. Users in those cities may find the two competing on price, although both Holland and Atkinson agree that price competition is not the best way to build business.

Fidelity's Maybaum doesn't see any great price advantage in using one carrier over another.

"Rate differences tend to balance over the long haul," he says. "Both Teleport and New England Telephone are very competitive in pricing."

Growing, growing, grown

Holland estimates that there are between 50 and 75 areas in the U.S. that are viable for competition in the local market. The accompanying chart shows 33 cities currently served by competitive local carriers. The major competitive local carriers are always considering launching services in other cities.

Perhaps the most influential factor in the development of competition in these markets will be allowing the competitive local carriers to interconnect with the local telephone company networks.

All the competitive local carriers want to be allowed to link directly to the local telephone company, whether through virtual collocation or direct physical collocation at the local exchange carrier's central offices.

Teleport's recent agreement with Pacific Bell, for instance, allows for virtual collocation with that Bell company's switches.

MFS is looking for physical collocation, according to Holland. He asserts that the move by telephone companies from electromechanical switching equipment to all-digital systems has freed up large amounts of space in central offices. "Most of these COs have more than enough room to accommodate physical collocation," Holland says.

A win-win situation

In short, the competitive local carrier business is healthy and growing. New services are being rolled out; prices are leveling off and, in some areas, dropping. Most notably, however, established local monopoly carriers are noticing the competitive local carriers' success and taking action.

Most of this action is beneficial to users through improved service, discounted rates, more flexible contracts and services. Local telephone companies are being forced to be competitive and are learning that the best way to compete is at the service level.

"The pipe business will always be the core business of this industry," says Susan Rodriguez, vice-president for customer relations at Intermedia.

According to Rodriguez, what Intermedia and the industry in general need to do in order to grow is to continue to add and improve services, offering better quality of service to the customer. In this way, everyone involved can gain. Competitive local carriers will gain business, local telephone companies will become innovative and competitive, and users will have wider access to more services at better prices.

Competitive local carriers (continued on page 54)

Company	Metropolitan area	Year operational	Network composition	Route miles covered	Number of buildings covered	Carriers accessed	Services offered
Indiana Digital Access Indianapolis (317) 849-5639	Indianapolis	1988	100% fiber	50	11	Allnet; Cable & Wireless Communications; Consolidated Network, Inc.; CTI; GTE Corp.; LiTel; Long Distance Discount Services/Phone America; MCI; One Call Communications, Inc.; Qwest; SP Telecom; WilTel	DS1; DS3; DDS services
Institutional Communications Co. McLean, Va. (703) 827-5995	Washington, D.C.	1987	100% fiber	200	425	Amtrak, Inc.; AT&T; Cable & Wireless Communications; Communications Satellite Corp.; IDB Communications Group, Inc.; MCI; Metromedia Communications; TRT/FTC; US Sprint; WilTel	DS0; DS1; DS3; DDS services; fractional DS1; fractional DS3; E-1
Intermedia Communications of Florida, Inc. Miami (305) 470-2424	Miami	1990	100% fiber	8	6	Advanced Telecommunications Corp. (ATC); Allnet; AT&T; Cable & Wireless Communications; McCaw Communications; Metromedia Communications; MCI; National Telecommunications of Florida; Phone One; Southnet Corp.; SP Telecom; Telesphere; US Sprint; WilTel	DS0; DS1; DS3; DDS services; fractional DS1; fractional DS3; flexible bandwidth DS1 and DS3; virtual POP facilities; service recovery system; access assurance; campus LAN services; LAN management; video
Intermedia Communications of Florida, Inc. Orlando, Fla. (407) 648-2200	Orlando	1988	100% fiber	65	21	ATC; Allnet; AT&T; Cable & Wireless Communications; McCaw Communications; MCI; Metromedia Communications; National Telecommunications of Florida, Inc.; Phone One; Southnet; SP Telecom; Telesphere; US Sprint; WilTel	DS0; DS1; DS3; DDS services; fractional DS1; fractional DS3; flexible bandwidth DS1 and DS3; virtual POP facilities; service recovery system; access assurance; campus LAN services; LAN management; video
Intermedia Communications of Florida, Inc. Tampa, Fla. (813) 621-0011	Tampa	1988	100% fiber	91	75	ATC: Allnet; AT&T; Cable & Wireless Communications; McCaw Communications; MCI; Metromedia Communications; National Telecommunications of Florida; Phone One; Southnet; SP Telecom; Telesphere; US Sprint; WilTel	DS0; DS1; DS3; DDS services; fractional DS1; fractional DS3; flexible bandwidth DS1 and DS3; virtual POP facilities; service recovery system; access assurance; campus LAN services; LAN management; video
Kansas City FiberNet Kansas City, Mo. (816) 842-7212	Kansas City	1988	100% fiber	140	34	Allnet; AT&T; Long Distance Discount Service/Phone America; MCI; MidAmerican Communications; Technical Equipment Corp. (TEC); US Sprint; Western Telecommunications, Inc. (WTCI); WilTel	DS1; DS3; DDS services: fractional DS1; fractional DS3; TV-1 video; digital video
Linkatel Communications, Inc. Carlsbad, Calif. (619) 438-1010	San Diego	1991 (under construction)	80% fiber, 20% digital microwave	15	NA	Allnet; AT&T; MCI; US Sprint; WilTel	DS1; DS3
LOCATE New York (212) 509-5115	New York	1983	100% digital microwave	NA	75	AT&T; Cable & Wireless Communications; MCI; Qwest; RCI; US Sprint; WilTel	DS1; DS3; interexchange carrier access; bypass access; diversity disaster recovery
	Chicago	1983	100% digital microwave	NA	20	AT&T; Cable & Wireless Communications; MCI; US Sprint; WilTel	DS1; DS3; interexchange carrier access; bypass access; diversity disaster recovery
	Boston	1983	100% digital microwave	NA	10	AT&T; Cable & Wireless Communications; MCI; US Sprint; WilTel	DS1; DS3; interexchange carrier access; bypass access; diversity disaster recovery
	Detroit	1983	100% digital microwave	NA	15	AT&T; Cable & Wireless Communications; MCI; US Sprint; WilTel	DS1; DS3; interexchange carrier access; bypass access; diversity disaster recovery
	Washington, D.C.	1983	100% digital microwave	NA	20	AT&T; Cable & Wireless Communications; MCI; US Sprint; WilTel	DS1; DS3; interexchange carrier access; bypass access; diversity disaster recovery
Metrex Corp. Atlanta (404) 393-9755	Atlanta	1991 (under construction)	100% fiber	50	45	ATC; AT&T; MCI; US Sprint	DS1; DS3; fractional DS3
MetroComm, Inc. Columbus, Ohio (614) 221-9230	Columbus	1991	95% fiber, 5% digital microwave	127	85	Allnet; AT&T; ConQuest Telecommunications Services; LiTel; MCI; NTN; Qwest; US Sprint; WilTel	DS0; DS1; DS3; DDS service; fractional DS1; fractional DS3; Centrex (under consideration); video
Metropolitan Fiber Systems, Inc. Baltimore (301) 783-5555	Baltimore	1989	100% fiber	48.34	29	Allnet; AT&T; Cable & Wireless Communications; Contel ASC; CTI; Long Distance Service of America; MCI; Mid-Atlantic Telecommunications; RCI; SP Telecom; Telesphere; US Sprint; WilTel	DS1; DS3; fractional T-1; multiplexed DS1; DS1 and DS3 hub; E-1 service; DDS services; analog; network reconfiguration and monitoring service; interconnection services; video service
Metropolitan Fiber Systems, Inc. Boston (617) 345-0092	Boston	1989	100% fiber	12.59	36	Allnet; American Private Lines; AT&T; Cable & Wireless Communications; Contel ASC; CTI; Eastern Microwave, Inc. (EMI); First Phone of New England, Inc.; LiTel; MCI; Metromedia Communications; Qwest; RCI; SP Telecom; Transpoint Communications, Inc.; US Sprint; WilTel; Yankee Microwave, Inc.	DS1; DS3; fractional T-1; multiplexed DS1; DS1 and DS3 hub; E-1 service; DDS services; analog; network reconfiguration and monitoring service; interconnection services; video service
Metropolitan Fiber Systems, Inc. Chicago (312) 946-0060	Chicago	1988	100% fiber	6.03	58	AT&T; Cable & Wireless Communications; CTI; EMI; Metromedia Communications; Qwest; RCI; WilTel	DS1; DS3; fractional T-1; multiplexed DS1; DS1 and DS3 hub; E-1 service; DDS services; analog; network reconfiguration and monitoring service; interconnection services; video service
Metropolitan Fiber Systems, Inc. Dallas (214) 880-0225	Dallas	1991	100% fiber	10.58	27	ATC; Allnet; AT&T; Cable & Wireless Communications; Contel ASC; CTI; MCI; Metromedia Communications; NTS; Qwest; SP Telecom; Startel of Abilene; Telesphere; Transpoint Communications; US Sprint; Valu-line of Longview; VARTEC; Westel Long Distance Communication Co.; WilTel	DS1; DS3; fractional T-1; multiplexed DS1; DS1 and DS3 hub; E-1 service; DDS services; analog; network reconfiguration and monitoring service; interconnection services; video service
Metropolitan Fiber Systems, Inc. Houston (713) 236-9637	Houston	1990	100% fiber	101.76	79	ATC; Allnet; American Telecommunications Network Services, Inc.; AT&T; Cable & Wireless Communications; Contel ASC; CTI; Long Distance Service of America; Metromedia Communications; MCI; Qwest; SP Telecom; Southwestern Network Services, Inc.; Southwest Micronet, Inc.; Sprint International; US Sprint; WilTel; World Communications, Inc.	DS1; DS3; fractional T-1; multiplexed DS1; DS1 and DS3 hub; E-1 service; DDS services; analog; network reconfiguration and monitoring service; interconnection services; video service
Metropolitan Fiber Systems, Inc. Los Angeles (213) 489-4637	Los Angeles	1990	100% fiber	10.18	31	Allnet; AT&T; Associated Communications of Los Angeles; Cable & Wireless Communications; ComSystems; Contel ASC; CTI; FiberNet; LiTel; Long Distance USA; Metromedia Communications; MCI; MTEL Digital Services, Inc.; SP Telecom; Telesphere; Transpoint Communications; WilTel; WTCI	DS1; DS3; fractional T-1; multiplexed DS1; DS1 and DS3 hub; E-1 service; DDS services; analog; network reconfiguration and monitoring service; interconnection services; video service
Metropolitan Fiber Systems, Inc. Minneapolis (612) 333-4000	Minneapolis	1989	100% fiber	3.06	18	Allnet; American ShareCom; AT&T; Automated Communications, Inc.; Cable & Wireless Communications; MCI; Metromedia Communications; MidAmerican Communications; MRC; Norlight; US Link; US Sprint; Sprint International; WilTel	DS1; DS3; fractional T-1; multiplexed DS1; DS1 and DS3 hub; E-1 service; DDS services; analog; network reconfiguration and monitoring service; interconnection services; video service

DACS = Digital Access and Cross-Connect System
DDS = Digital data service
NA = Not applicable
OC = Optical Carrier
POP = Point of presence
SONET = Synchronous Optical Network

This chart includes a representative selection of competitive local carriers. Carriers not included may offer a full range of competitive services.

SOURCE: TELECHOICE, INC., MONTCLAIR, N.J.

Competitive local carriers (continued from page 53)

Company	Metropolitan area	Year operational	Network composition	Route miles covered	Number of buildings covered	Carriers accessed	Services offered
Metropolitan Fiber Systems, Inc. New York (212) 425-2424	New York	1991	100% fiber	55.3	175	Allnet; American Telco Network Services, Inc.; AT&T; Cable & Wireless Communications; CTI; Contel ASC; Digital Service Network; MCI; Metromedia Communications; Qwest; RCI; TRT/FTC; Telesphere	DS1; DS3; fractional T-1; multiplexed DS1; DS1 and DS3 hub; E-1 service; DDS services; analog; network reconfiguration and monitoring service; interconnection services; video service
Metropolitan Fiber Systems, Inc. Philadelphia (215) 977-8500	Philadelphia	1989	100% fiber	7.04	24	Allnet; American Longlines; AT&T; ATX Telecommunications Services, Inc.; Cable & Wireless Communications; Chadwick Communications, Inc.; CTI; EMI; LiTel; MCI; Metromedia Communications; Qwest; RCI; SP Telecom; Telesphere; US Sprint; WilTel	DS1; DS3; fractional T-1; multiplexed DS1; DS1 and DS3 hub; E-1 service; DDS services; analog; network reconfiguration and monitoring service; interconnection services; video service
Metropolitan Fiber Systems, Inc. Pittsburgh (412) 391-3636	Pittsburgh	1990	100% fiber	6.52	31	Allnet; AT&T; Cable & Wireless Communications; CTI; EMI; MCI; Metromedia Communications; Qwest; SP Telecom; Telenet Communications Corp.; Transpoint Communications; US Sprint; WilTel	DS1; DS3; fractional T-1; multiplexed DS1; DS1 and DS3 hub; E-1 service; DDS services; analog; network reconfiguration and monitoring service; interconnection services; video service
Metropolitan Fiber Systems, Inc. San Francisco (415) 362-3300	San Francisco	1989	100% fiber	5.26	41	Allnet; AT&T; Bay Area Teleport; Cable & Wireless; CTI; ComSystems; Contel ASC; Express Tel; LiTel; MCI; Metromedia Communications; Sector; SP Telecom; Transpoint Communications; TRT/FTC; US Sprint; WilTel; WTCI	DS1; DS3; fractional T-1; multiplexed DS1; DS1 and DS3 hub; E-1 service; DDS services; analog; network reconfiguration and monitoring service; interconnection services; video service
MTEL Digital Services, Inc. Irvine, Calif. (714) 833-7171	Los Angeles (including Orange and San Bernadino counties)	1989	50% fiber, 50% digital microwave	109	19	Allnet; Cable & Wireless Communications; ComSystems; GTE Corp.; Logicall Communique; MCI; Metromedia Communications; MFS; NTN; Pacific Bell; South Bay Communications, Inc.; Shared Users Network, Inc.; Telesphere; Thrifty Tel, Inc.; US Sprint; West Coast Telecommunications, Inc.; WilTel	DS1; DS3; fractional DS3; switched long-distance services; video
MWR Telecom, Inc Des Moines, Iowa (515) 242-4360	Des Moines	1979	100% fiber	75	45	AT&T; Contel ASC; MCI; Iowa Network Services; WilTel	DS0; DS1; DS3; DDS services; fractional DS-1; fractional DS3; dark fiber; contract construction; equipment leasing; equipment maintenance; LANs; splicing and testing; consulting
New England Digital Distribution, Inc. Boston (617) 245-5678	Boston	1990	90% fiber, digital microwave, copper cabling	9	16	AT&T; Cable & Wireless Communications; First Phone of New England; MCI; Metromedia Communications; US Sprint; WilTel; Wang Communications, Inc.	DS1; DS3; fractional DS3; dark fiber
Penn Access Corp. Pittsburgh (412) 338-9090	Pittsburgh	1990	100% fiber	83	185	AT&T; Cable & Wireless Communications; LiTel; MCI; Metromedia Communications; US Sprint; WilTel	DS0; DS1; DS3; DDS services; fractional DS-1; fractional DS3; token-ring LAN; Ethernet LAN; dark fiber; access hot site; Centrex disaster recovery
Phonoscope Communications, Inc. Houston (713) 271-0066	Houston	1991	50% fiber, 50% coaxial	200	34	ATC; MCI; US Sprint; WilTel	DS0; DS1; DS3; fractional DS1; digital and analog videoconferencing; dark fiber; satellite downlink transmission services; business and government news broadcast; data information services
Privacom, Inc. Charlotte, N.C. (704) 342-4000	Charlotte	1991	98% fiber, 2% digital microwave	5	25	AT&T; Long Distance Discount Service/Phone America; MCI; Metromedia Communications; US Sprint (planned); WilTel	DS1; DS3, fractional DS1; fractional DS3; dark fiber; channelized DS1 and DS3 services; PrivaLAN; PrivaConference (teleconferencing services)
Teleport Communications Group Boston (617) 426-2792	Boston	1989	100% fiber	15	53	All major carriers	DS0; DS1; DS2; DS3; DS1E; channelized DS1; connection on demand for DS1 and DS-3; video; Centrex; PBX access trunks; extended area regional calling plan
Teleport Communications Group Chicago (312) 419-3030	Chicago	1990	100% fiber	15	22	All major carriers	DS0; DS1; DS2; DS3; DS1E; channelized DS1; connection on demand for DS1 and DS-3; video; Centrex; PBX access trunks; extended area regional calling plan
Teleport Communications Group Dallas (214) 701-9776	Dallas	1989	100% fiber	15	16	All major carriers	DS0; DS1; DS2; DS3; DS1E; channelized DS1; connection on demand for DS1 and DS-3; video; Centrex; PBX access trunks; extended area regional calling plan
Teleport Communications Group Houston (713) 752-0122	Houston	1990	100% fiber	3	38	All major carriers	DS0; DS1; DS2; DS3; DS1E; channelized DS1; connection on demand for DS1 and DS-3; video; Centrex; PBX access trunks; extended area regional calling plan
Teleport Communications Group Los Angeles (213) 896-0000	Los Angeles	1990	100% fiber	10	8	All major carriers	DS0; DS1; DS2; DS3; DS1E; channelized DS1; connection on demand for DS1 and DS-3; video; Centrex; PBX access trunks; extended area regional calling plan
Teleport Communications Group New York (212) 983-2000	New York	1985	100% fiber	290	315	All major carriers	DS0; DS1; DS2; DS3; DS1E; channelized DS1; connection on demand for DS1 and DS-3; video; Centrex; PBX access trunks; extended area regional calling plan
Teleport Communications Group San Francisco (415) 989-8273	San Francisco	1990	100% fiber	6	18	All major carriers	DS0; DS1; DS2; DS3; DS1E; channelized DS1; connection on demand for DS1 and DS-3; video; Centrex; PBX access trunks; extended area regional calling plan

DACS = Digital Access and Cross-Connect System
DDS = Digital data service
NA = Not applicable
OC = Optical Carrier
POP = Point of presence
SONET = Synchronous Optical Network

This chart includes a representative selection of competitive local carriers. Carriers not included may offer a full range of competitive services.

SOURCE: TELECHOICE, INC., MONTCLAIR, N.J.

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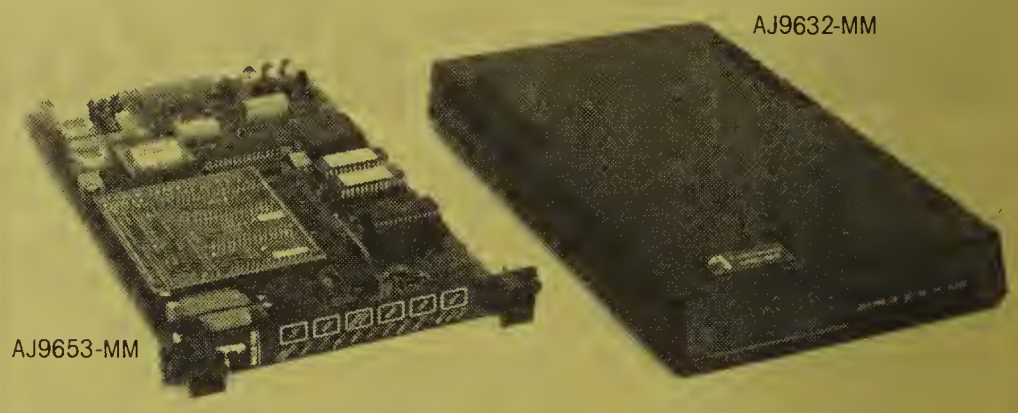

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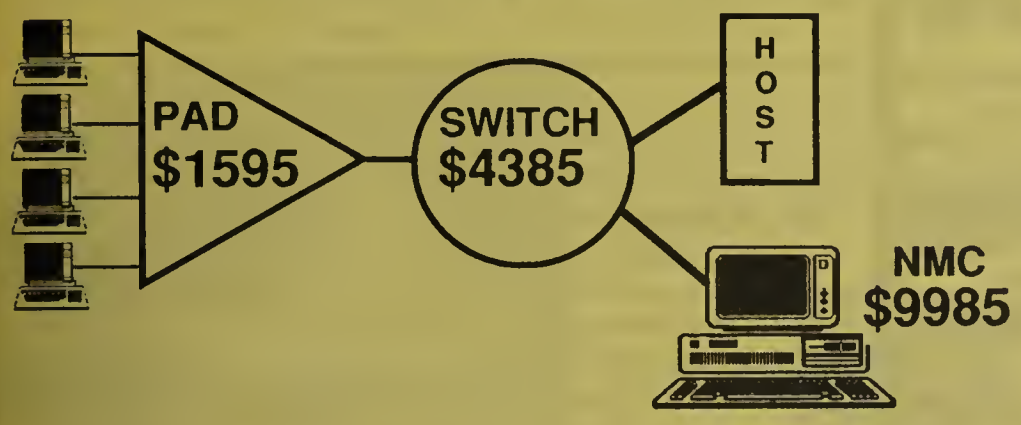

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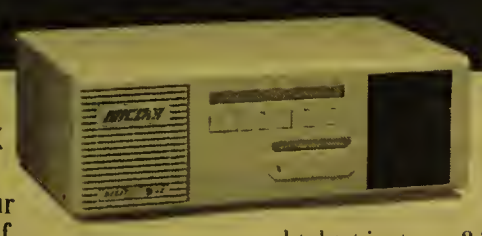

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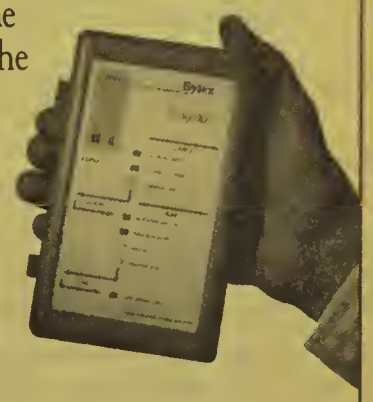

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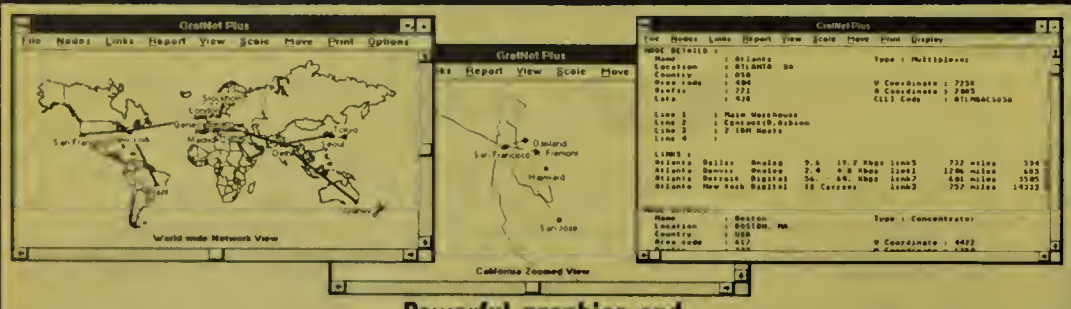

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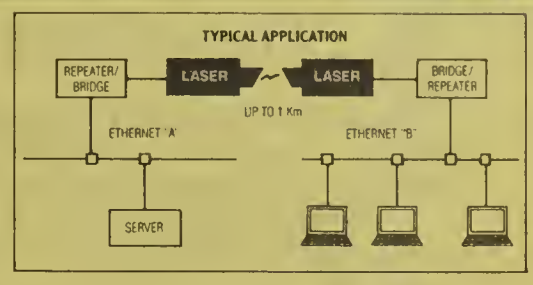

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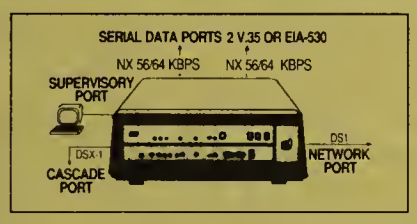

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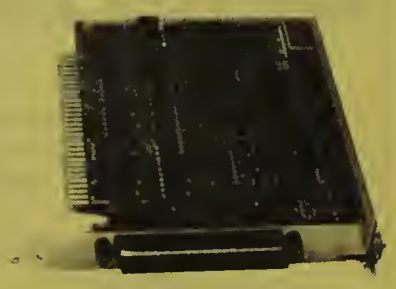

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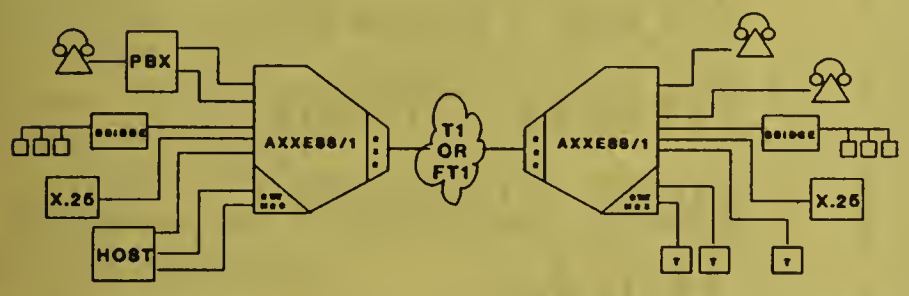

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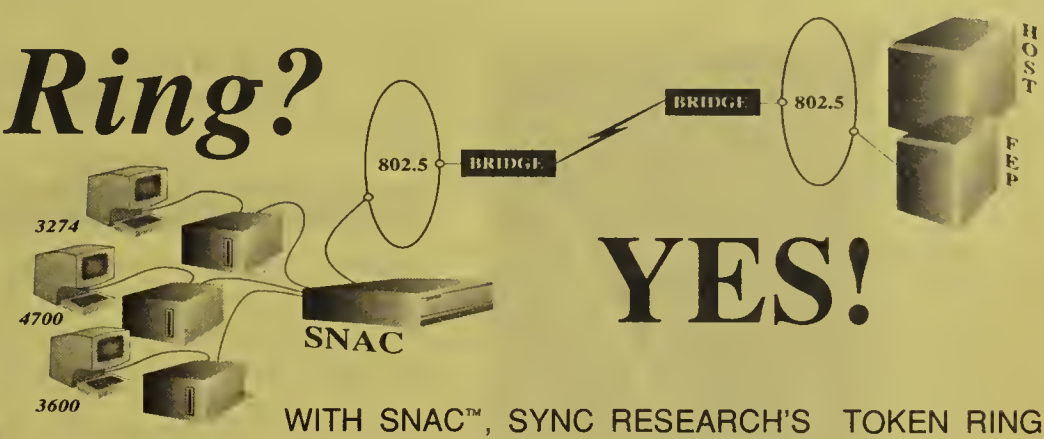

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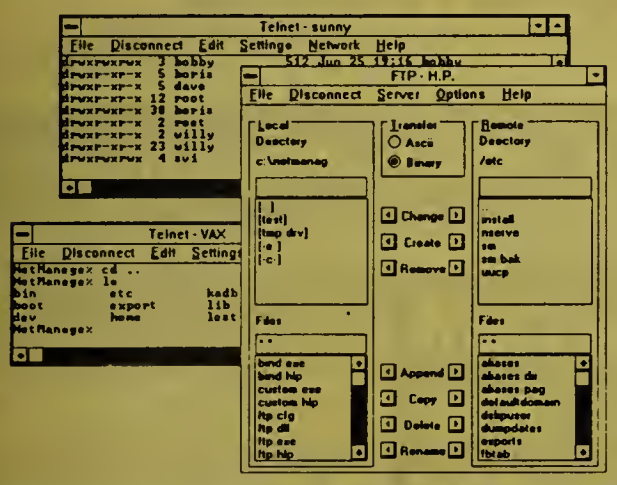

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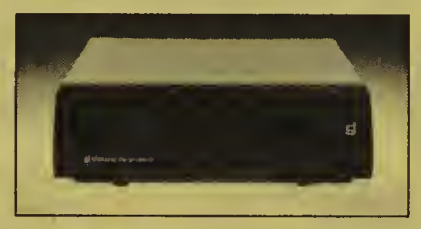

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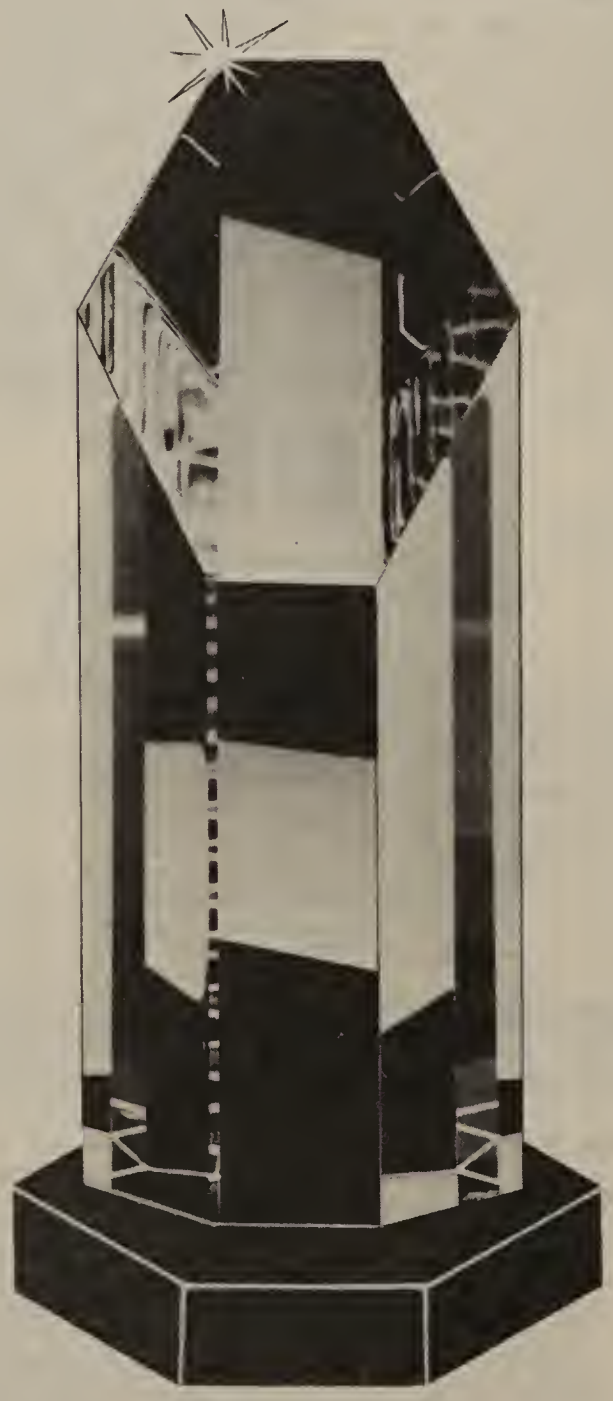

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Defense pulls in reins on CALS costs

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — Top Department of Defense officials last week announced plans to restructure the Computer-Aided Acquisition and Logistics Support (CALS) program in order to hold down costs.

Assistant Secretary of Defense Colin McMillan, pointing to the department's need to streamline the CALS program in the face of budget cuts, announced the establishment of the CALS Council to oversee and coordinate U.S. Navy, Army and Air Force acquisitions of electronic procurement systems.

McMillan's statement marks the first time the Defense Department has clarified its CALS policy direction in the wake of the recent shake-up in the CALS office in which the previous director, Michael McGrath, was ousted. The announcement indicates the Defense Department's new focus on practical implementation problems rather than purely technical issues.

McMillan, chairman of the CALS Council, said that Army Maj. Gen. Edward Baldwin has been appointed to serve as vice-chairman of the council (see "People and Positions," page 9). Defense Department officials maintained that further appointments to the council from other branches of the military will be made soon.

To date, the three branches of the service have largely gone in their own directions in procuring CALS systems.

Marianne Pietras, acting director of the CALS office, said the council, in adopting an oversight role, will strive to more closely coordinate CALS efforts between the various branches of the service. That should cut down on duplication of effort and redundant systems.

The new direction of the CALS Council could result in larger single acquisitions of CALS-compliant systems.

McMillan said the restructuring is largely intended to save money. He explained that the breakup of the Soviet Union and the change in defense posture would ultimately mean the Defense Department has less to spend.

Eliminating waste

"We still have to produce sophisticated weapons systems," McMillan said, noting that CALS is an essential component of the military's effort to eliminate paper and save time and money in the procurement, production and support of new weapons systems.

The CALS program was launched six years ago by the Defense Department with the help of vendors in the defense industry as a long-range plan to eliminate paper-based information exchange by both government and industry in order to speed production, spare parts ordering and maintenance.

The CALS program calls for the creation of data bases containing weapons systems design and support information that can be accessed by government users and their suppliers.

The effort is being coordinated by the National Institute of Standards and Technology, the Defense Department and industry organizations such as the Na-

(continued on page 66)

Novell, Microsoft release new 3Com migration tools

By Caryn Gillooly
Senior Editor

PROVO, Utah — Novell, Inc. last week introduced a tool kit to help users of 3Com Corp.'s 3+Share local-area network operating system migrate to NetWare 3.11.

In related news, Microsoft Corp. last week began shipping a tool kit designed to help users migrate to LAN Manager 2.0 by enabling them to install LAN Manager 2.0-based servers that support client workstations in 3+Share and 3+Open environments.

The dual announcements come in response to 3Com's decision late last year to leave the software market and focus on hardware, a shift that left 3Com's network operating system customers with no upgrade path.

Novell's tool kit is basically a set of utilities bundled into a single application. To make the migration, a net administrator would first back up data from a 3+Share server and then use the new tool to install NetWare 3.11 on the server. The tool would be used a second time to restore the data as NetWare 3.11 files.

A Novell spokesman said the application transfers user accounts — including files and passwords — intact. After the changeover, users simply log on as they normally would.

Customers with large 3Com installations that cannot migrate all servers at once can use the tool to let DOS clients talk to NetWare and 3+Share servers simultaneously.

For customers with 3Com's proprietary hardware — the 3Server/500 and 3Server/600 lines — Novell will provide 3Com's Support Kit, which includes the drivers needed to let NetWare run on these servers.

The migration tools will be available by year end, at which time pricing will be determined. Novell said it will discount NetWare 3.11 by between $500 and $2,000 for 3Com customers with 3+Share and 3+Open Version 1.X. 3+Open Version 2.0 users will get a $3,000 discount.

The Microsoft side

In response to Novell's announcement, Microsoft moved the release date of its own migration tool kit up a week.

Microsoft's product, announced in January, is the Microsoft Upgrade Toolkit for 3Com Networks, Release 1. It consists of a Xerox Corp. Xerox Network Systems protocol stack and several utilities, such as unified logon, that will let 3+Share, 3+Open and LAN Manager servers support any mix of clients.

To help customers preserve their 3Com hardware, Microsoft said a future release of LAN Manager will run on all 3Com servers, including the 3S/400 series. Currently, customers must purchase LAN drivers from 3Com to run LAN Manager on these servers.

Microsoft's Upgrade Toolkit is available now at a price of $149. For those customers upgrading to LAN Manager 2.0, Microsoft is offering the unlimited-user version for $995 — more than $6,000 off the retail price.

"Conceptually, this is good," said Peter Stevens, chief of the Division of Communications and Computing Technology at the Bureau of Labor Statistics in Washington, D.C. "Anyone who was running a big 3+Share operation feels a little abandoned."

Stevens said he has not yet spoken to Novell about its upgrade options but he has spoken to Microsoft and even Banyan Systems, Inc. about migrating to their environments. The problem is that neither has an X.500-based global naming scheme to match 3Com's.

Other users echoed Stevens' sentiments. "LAN Manager 2.0 and NetWare 3.11 are similar products," said Michael Chacon, president of the 3Wizard Council — a group similar to Novell's Certified NetWare Engineers — and president of MEC and Associates, a Los Angeles-based consulting firm. "At this point, I don't have a personal preference. Until a directory service comes out, there's no real benefit to [migrating] to either one.

"The first company that shows me an X.500 directory service will be the company I'll seriously look at and consider recommending to my clients," he said.

Novell and Microsoft declined to comment on when an X.500-based directory service might become available.

AT&T facing delays in service

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In some countries, provisioning delays have arisen because of constraints in the numbering plans used by foreign carriers, Bikle said. For example, rather than following a toll-free prefix, such as 800, followed by seven digits, some carriers are only using three digits.

Three digits limits the quantity of toll-free numbers that can be allocated to 999. In order to add more subscribers, foreign carriers need to increase the number of digits in their international toll-free numbers.

Heckendorn said that some foreign carriers are also balancing the amount of new toll-free numbers they provision to U.S. carriers with the amount of toll-free numbers their customers receive in the U.S.

He said foreign carriers receive less money for toll-free calls that originate in their country than for standard international calls, and they want to make sure that revenue loss is made up with extra international toll-free calling revenue from the U.S.

But foreign companies are demanding fewer international toll-free calling services than U.S. companies. This means that U.S. carriers can run into problems getting enough international toll-free numbers from foreign carriers to meet demand.

According to Bikle, provisioning delays are affecting all U.S. carriers equally. But Bob Shepp, executive vice-president at International 800 Corp. in Nanuet, N.Y., said his company has not experienced any unusual problems.

International 800 is a 17-year-old, $4.6 million company that focuses primarily on providing international toll-free calling services. Shepp said International 800 now provides these services in 62 countries and has 744 international toll-free lines in operation. The company acts as a middleman that obtains international toll-free calling services from foreign carriers on users' behalf.

Shepp said he doesn't believe foreign carriers lack the facilities for new international toll-free numbers because the demand for international toll-free calling services is relatively low.

US Sprint's Flamand said the carrier is not having any unusual problems provisioning new international toll-free numbers.

US Sprint now provides international toll-free calling services from 28 countries to the U.S., and the carrier expects to introduce service from another six countries to the U.S. this month.

US Sprint does not currently provide international toll-free calling service from Mexico, where AT&T is experiencing the longest provisioning lead times, according to Bikle.

US Sprint has had delays in the past and had to work with foreign carriers to fix the problems, Flamand said. He added that France Telecom has placed a ceiling on the number of new international toll-free access lines US Sprint can obtain in a single month.

He declined to say what that ceiling is, but he pointed out that the quantity of new service orders US Sprint is funneling to France Telecom falls below the limit. The carrier is trying to get France Telecom to drop the ceiling so that sales are not impeded.

MCI Communications Corp. declined to comment about its provisioning lead times for international toll-free services.

AT&T in favor of barring RBHCs from info services

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — In a major policy shift, AT&T officials said last week they would support legislation barring the regional Bell holding companies from the information services market.

Almost since the first day the Modified Final Judgment took effect in 1984, the RBHCs have tried to extricate themselves from provisions that prohibit them from competing in three business areas — manufacturing, long distance and information services. Although AT&T has stringently opposed any loosening of the manufacturing and long-distance bans, the carrier has, until now, steadfastly refused to oppose RBHC entry into information services.

In the first public admission that AT&T is changing course on the Modified Final Judgment information services prohibition, Michael Baudhuin, vice-president of federal government affairs at AT&T, said in an interview with *Network World* that the carrier would support an effort to persuade Congress not to lift Modified Final Judgment bans, but instead write them into law.

"We've got three safeguards that have been tried and have worked very well," he said. "If Congress feels there is a need to legislate, then we're saying, why don't you legislate the safeguards that have been proven, that is, the injunctions [in the Modified Final Judgment]?"

AT&T's change of heart ap-

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Wellfleet offers up gigabit router

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port the same protocols as Wellfleet's existing routers, including the Transmission Control Protocol/Internet Protocol, Digital Equipment Corp.'s DECnet, Apple Computer, Inc.'s AppleTalk, Novell, Inc.'s Internetwork Packet Exchange (IPX), Xerox Corp.'s Xerox Network Systems, as well as emerging Open Systems Interconnection protocols.

It will also support the same bridging algorithms, such as Source Routing, and the same routing protocols, including the Routing Information Protocol, Open Shortest Path First and the OSI Integrated Intermediate System to Intermediate System protocols.

The router is based, in part, on the same multiprocessing architecture Wellfleet uses in its existing Link, Feeder and Concentrator Node routers. Those devices contain individual Advanced Communication Engine (ACE) processors — as many as 13 — linked via a 320M bit/sec VMEbus. The processors, in turn, support four-port link modules for LAN or WAN connections.

For the Backbone Node, Wellfleet redesigned the ACE processors to handle higher packet forwarding rates and replaced the VMEbus with the Parallel Packet Express (PPX), a backplane consisting of four 256M bit/sec data channels with an aggregate throughput of 1G bit/sec. The PPX can interconnect as many as 13 Fast Routing Engines (FRE), the more powerful versions of the ACE processors. By contrast, rival Cisco Systems, Inc.'s routers support a maximum backplane speed of 533M bit/sec.

Wellfleet said the PPX is an improvement over the VMEbus because it offers load sharing across four data paths and provides fault tolerance by making it possible to automatically redistribute traffic across available channels in the event of a data path failure.

Nick Lippis, a principal at Northeast Consulting Resources, Inc. in Boston, said the PPX design is unique because it acts as a high-speed network among peer processors rather than as a traditional bus, which has attendant signaling and handshaking overhead that adversely affect processor performance.

Each FRE processor module is based on a Motorola, Inc. 68040 microprocessor, which handles packet processing. The FRE modules each have a maximum packet forwarding rate of 75K packet/sec. But the router as a whole can process 480,000 64K byte packet/sec.

Wellfleet's current ACE processors use a Motorola 68020 or 68030 microprocessor and have scalable performance ranging from 14.5K to 188K packet/sec (see Figure 1, this page).

Each FRE is linked to an individual Link Module, which can support any combination of four LAN or WAN service ports.

Packets enter the router via a port on the Link Module and are relayed to the attached FRE, where the packet handling decision is made. The FRE either redirects the packets to another port on the attached Link Module or across the PPX to the appropriate FRE/Link Module (see Figure 2, this page).

The FRE is compatible with Wellfleet's existing Link Modules, meaning customers can use existing Link Modules with the new Backbone Node.

Lippis said the FRE processor design is comparable to that of a packet switch in that each processor is aware of the multiple paths that exist to other processors. A specific path is randomly selected on a per-packet basis to ensure that traffic is evenly distributed among the four PPX channels.

The Backbone Node also comes with redundant power supplies for added fault tolerance.

Wellfleet initially will offer two Backbone Node models. The Backbone Link Node (BLN) has four FRE slots and a maximum of to 16 LAN/WAN ports, including four FDDI interfaces.

The Backbone Concentrator Node (BCN) is a 13-slot unit that will support as many as 52 LAN/WAN interfaces or 13 FDDI interfaces.

Backbone Node pricing is based on configuration. A BLN model configured to support four FDDI interfaces costs $95,250. A BCN model configured with 12 FDDI and one Ethernet port costs $290,000.

The BLN will be available in the first quarter of 1992 and the BCN will be available in the second quarter.

Andrew Marks, data communications manager at LA Gear in Marina del Rey, Calif. said he has been waiting for a router like the Backbone Node that can safely handle bandwidth-hungry applications. Scott Bradner, a senior technical consultant at Harvard University in Cambridge, Mass., said the Backbone Node's ability to hot swap and dynamically reconfigure the router without shutting down the network will be key to users who can't afford any network downtime. No other router on the market today provides sufficient reliability, he said.

"Wellfleet's fault tolerance will appeal to network managers who previously wouldn't have touched multiprotocol routers with a 10-ft pole because of their perceived unreliability," Bradner said.

Performance comparison of Wellfleet's routers

Figure 1

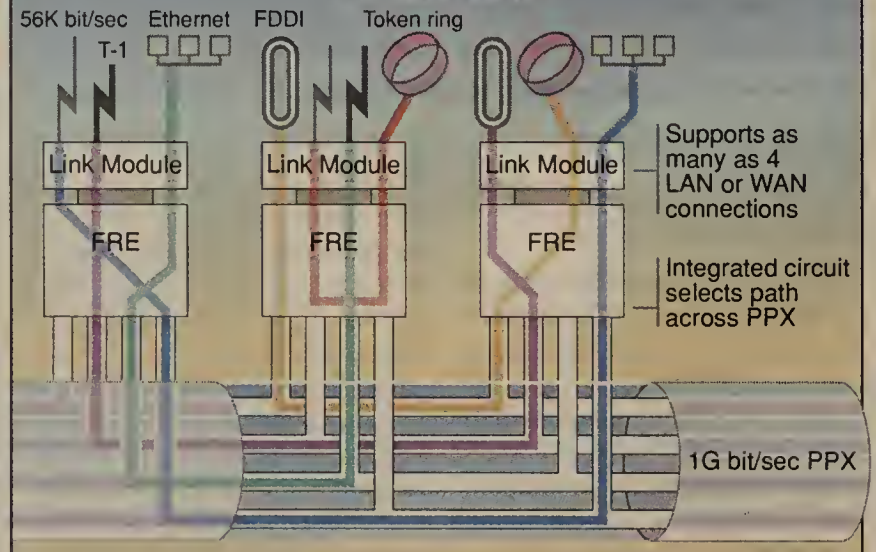
Product	Aggregate performance (packet/sec)	Port capacity		Availability
		LAN	WAN	
Feeder Node/1000	14.5K	2	2	Now
Link Node/2000	58K	16	16	Now
Concentrator Node/3000	188.5K	52	52	Now
Backbone Link Node/2500	150K	16	16	1Q 1992
Backbone Concentrator Node/3500	480K	52	52	2Q 1992

WELLFLEET communications

GRAPHIC BY SUSAN SLATER SOURCE: WELLFLEET COMMUNICATIONS, INC., BEDFORD, MASS.

Wellfleet's backbone router design

Figure 2



FRE = Fast Routing Engine PPX = Parallel Packet Express

The Backbone Node uses FREs to decide if data should be passed back over attached link modules or routed across any of 4 PPX channels, which provide redundant paths between routing engines.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: WELLFLEET COMMUNICATIONS, INC., BEDFORD, MASS.

Portable pack speeds delivery

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one workstation vendor but declined to name them.

LIR will demonstrate its Frame Relay Portable Software at the INTEROP 91 Conference and Exposition here Oct. 9-11.

The software includes modules that handle congestion control and network management and provide support for the permanent virtual circuits used in frame relay transmissions. A module providing support for switched virtual circuits is planned.

The product enables a device to support multiple virtual circuits running at up to 1.024M bit/sec.

Although congestion control and net management are not defined within the ANSI T1.S1 frame relay specification, LIR has included modules for these areas. The net management module includes the Local Management Interface specification defined by a group comprising Cisco Systems, Inc., Digital Equipment Corp., Northern Telecom, Inc. and StrataCom, Inc.

"You can't offer an effective package without congestion control and network management because an overloaded network could be brought to its knees," Scandalios said.

A growing list of multiplexer, bridge and router vendors, including Cisco, IBM, Northern Telecom and StrataCom, are developing frame relay interfaces for their products.

"Given that most vendors are fairly far along in their frame relay development cycles, I'm uncertain what the demand for this software is," said Steve Taylor, president of Distributed Networking Associates, a Greensboro, N.C., consultancy. "But it's priced to gain serious attention from those that haven't embarked on [frame relay interface] development."

Customers can either pay a $50,000 royalty-free license or pay $25,000 for a site license and a per-copy fee that ranges from $130 per single copy to $35 a copy when more than 1,000 copies are purchased.

Group forms to educate industry

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dors such as Microsoft Corp. and Computer Associates International, Inc., as well as consulting firms and industry publications.

The group plans to issue reports on client/server dos and don'ts that will be designed to help users determine the right time to start using client/server applications and the cost benefits, Gupta said. The consortium will also make case histories of successful client/server applications available.

Membership dues will be $100 a year for users and $500 annually for vendors and publications.

For more information on the forum, call DataEase International at (203) 374-8000.

Defense pulls in reins on CALS

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tional Security Industrial Association.

Already it has led to a set of data information exchange standards, such as the Initial Graphic Exchange Standard, that must now be used by both government and industry during the systems design process for large weapons systems.

Committing to CALS

Frank Brake, manager of strategic systems architecture at Newport News Ship Building, who was also at the meeting, said that building the Seawolf submarine with partners Electric Boat Co., General Electric Co. and Northern Research & Engineering Corp. represented the first all-electronic design of a submarine.

"Once committed to CALS, it becomes ingrained in the corporate process," Brake said. However, CALS-compliant tools can be hard to find.

He said Newport News could not find a suitable process planning tool to reference and store the drawings and specifications for the submarine. So the company, in partnership with Digital Equipment Corp., built the Planning Workbench, an X Window System-based software package for the VAX, which the companies are now marketing.

In a related announcement, McMillan said the Defense Department would soon issue a mandatory standard for digital technical manuals called the Integrated Electronic Technical Manual (IETM).

James Duhig, director of computer integrated systems at Marietta, Ga.-based Lockheed Aeronautical Systems Co., who was also on hand at the meeting last week, described IETM as a data base system that allows users to access electronically stored sections of technical manuals by simply inputting basic data concerning the weapons part itself.

Duhig said Lockheed Aeronautical, a division of Lockheed Corp., is prepared to upgrade to IETM in order to conform to CALS requirements. He noted that Lockheed, after being named last month as the prime contractor on the new F-22 Advanced Tactical Fighter, is now undergoing a major reengineering of its production and management systems in order to build the new plane.

Firm offers net mgmt. remedy

continued from page 1

said Jim Herman, a principal at Northeast Consulting Resources, Inc. in Boston.

Companies expressing support for Remedy included Chipcom Corp., Hewlett-Packard Co., Novell, Inc., Sun Microsystems, Inc.'s SunConnect division, SynOptics Communications, Inc., 3Com Corp., Vitalink Communications Corp. and Wellfleet Communications, Inc. Remedy officials have also had discussions with Digital Equipment Corp. and IBM.

PHOTO ©1991 JOHN OWENS
John Payne

Vendors stopped short of pledging to develop value-added network tools designed to run atop Remedy's generic applications but voiced commitment to the company's strategy. Some acknowledged that they had spent too much money developing full-blown network management platforms that failed to sell.

"We were on the wrong track" in developing just another in a long line of Simple Network Management Protocol (SNMP)-based net management systems, said Bill Tucker, vice-president of marketing at Wellfleet.

Wellfleet last month announced a new network management strategy consistent with Remedy's blueprint under which Wellfleet will offer a set of net control applications designed to work with any SNMP-based management station ("Wellfleet to offer tools for SNMP management stations," *NW*, Sept. 2).

Wellfleet's management applications may be tuned to work with generic net management applications from Remedy in the future, although Wellfleet would not commit to that.

David Mahler, a cofounder of Remedy and the company's vice-president of marketing, said he is encouraged that vendors are moving from the development of proprietary network management platforms to open management systems such as Sun's SunNet Manager and HP's OpenView.

The move to generic hardware, open management platforms and standard applications will enable net equipment vendors to focus their efforts on applications specific to their line, Mahler said. That will save money and speed the delivery of such applications.

"Users don't need to have a bunch of element management systems feeding into a centralized network management system," Mahler said. "Those systems are largely redundant and offer little in the way of a migration path."

Todd Dagres, director of data communications research at The Yankee Group, a market research firm in Boston, said, "A lot of companies that make routers, bridges, hubs and other equipment are making network management systems. Companies are going to have to get beyond making these little network management systems, which aren't making them any money and aren't doing users any good."

First fruits

Remedy's first product is a trouble-ticket application dubbed the Action Request System (ARS). It is designed to run atop the SunNet Manager and OpenView net management systems and will support other platforms, such as Novell NetWare servers, in the future.

The product enables end users to submit action requests from their desktop to a server via electronic mail. The software automatically generates a trouble ticket and alerts network administrators who will have access to a data base with information on past problems and solutions.

Equipment makers could design net management tools for their products that feed information to the trouble-ticket system.

Remedy plans to release ARS later this year. A prerelease version has already been installed at four sites and will be demonstrated at the INTEROP 91 Conference and Exhibition in San Jose, Calif., next month.

ARS 1.0 Server software, including support for three staff clients, will be priced at $6,500 for one copy and at $5,000 per copy for orders of two to five copies. A version of the server software supporting an SQL data base will sell for $9,500 for one copy and about $8,000 per copy for orders of two to five copies.

Additional client software will be priced at $4,000 for five-staff clients and $7,000 for 10-staff clients. End-user clients will receive software free of charge.

Remedy officials declined to comment on future applications.

Users and vendors agreed that Remedy has identified a market with huge potential.

"Relying on consistent platforms and base applications is what's necessary for us to be able to establish a long-term network management strategy," said John Payne, a communications architect at DHL Airways, Inc., which plans to use Remedy's software.

Josh Weiss, director of network management at Chipcom, said his company has invested big dollars in network management during the past two years but is planning to migrate to an open platform approach soon to get a better return on its investment.

"We think we can leverage the generic hardware and application platforms by focusing on building applications that will help users manage our products," he said. "That could be a key point of product differentiation."

Firm to help NetView users

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ploited its capabilities," said Hal Liberty, principal and senior consultant for NetTech. "What we're doing is showing them advanced techniques on how to exploit it."

NetTech should know.

Liberty, NetTech President Ellis Gregory and principal and senior consultant David Van Wingen together have a combined 90 years of service with IBM, including significant network management experience. Gregory started NetTech in June 1990.

The products NetTech will offer expand on sample programs Liberty and Gregory developed according to user requirements that helped automate NetView functions, such as the collection of data from the LAN Network Manager.

One of NetTech's forthcoming products, LView, is already being used by IBM here to centrally manage 168 LANs as well as throughout the Southeast region, he said.

LView works with IBM's LAN Network Manager, or an equivalent product that manages LAN hardware, to ship LAN error messages to NetView.

Among its functions are dynamic resource definition, automatic LAN recovery from certain errors, and dynamic status updates on bridges, LAN segments and SNA physical units.

It performs its functions according to the five phases that all NetTech management tools use: dynamic and automatic resource definition; passive and active resource monitoring; object-oriented data collection and management; automation of the recovery, initialization and operation of systems, networks and applications; and graphic and textual presentation services to the operator.

Besides LView, the company plans to offer a facility that provides real-time, graphics-based statistics on critical network components, such as crucial links or applications.

The product will enable an operator to determine performance degradation before a failure occurs.

A related facility will show the performance history of any critical component.

NetTech products will also perform some alarm correlation, Gregory said.

"There are three or four data bases in NetView. We take the critical data out of those multiple data bases and put it in another. That's the one we operate off to get availability and correlation," he said.

NetTech will also work with third parties to support the management of non-SNA devices by helping users or other vendors develop a NetView service point interface which translates alarms from non-IBM devices into NetView formats.

NetTech will also provide host-based enhancements to automate responses to error messages for non-IBM devices, he said.

One user of the company's services, MCI Communications Corp., is a happy customer thus far and has great respect for the company's personnel.

"Their reputations precede them," said Marty Capps, manager of network software at MCI in Rockville, Md. "They're probably some of the most respected individuals in the industry."

Capps uses NetTech tools to help automate management of MCI's internal SNA data network, which spans five data centers and supports over 10,000 terminals.

"They install some code on your machine, fire it up, and it automatically learns your environment," he said. The tools allow MCI to see only exception messages and will automatically restart critical applications, for example.

IBM spells out AS/400 roles

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Richard Odell, senior market planner for the AS/400 at IBM. CICS is the premier transaction processing monitor for IBM mainframes.

The APIs will enable users to run CICS applications on an AS/400, which in turn will enable the AS/400 to participate in a distributed network running CICS applications.

The AS/400 can already participate in a distributed network with mainframes using such protocols as LU 6.2, Odell said. But support for CICS will make it easier for IBM shops with programmers who are familiar with CICS to also employ the AS/400.

"It'll make a big difference to the larger accounts that have a fair amount of resources and knowledgeable people in that area," Odell said.

IBM also announced a statement of direction to enhance the OS/400 operating system to support POSIX. POSIX is an application program interface, originally for Unix-like operating systems, that enables applications to run on any operating system that supports it, Freeburger said.

The enhancement is targeted at government and European users with whom POSIX is popular because of its Unix roots.

IBM will support POSIX 1003.1, which includes the basic interface functions, and 1003.2, which includes such functions as entering system commands in a POSIX-compliant format.

IBM did announce one network-related enhancement scheduled to ship this month. The company enhanced its PC Support/400 to coexist on the same personal computer with Novell, Inc.'s NetWare client software. PC Support/400 enables DOS- or OS/2-based personal computers to access AS/400 applications and resources.

The enhancement will give the same microcomputer access to a Novell server and an AS/400 via a single local-area network adapter.

By using both software packages, users can log on to applications on the Novell server and the AS/400 simultaneously and toggle between them.

Reps push for quality probe

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nance, which is headed by Markey, is opening an investigation into network service quality. The lawmakers asked the carriers to submit information on internal service quality standards and recent network performance to the subcommittee by Sept. 20.

"High-quality telephone services are key to improved business efficiencies for U.S. competitiveness," the letter stated. "They are also critical for efforts to bring residential users the full benefits of 21st century telecommunications technology."

Although it was not mentioned in the letter, other legislators have also expressed concern about network quality. The House Government Operations Committee is planning a hearing for the end of this month on the recent network outages.

User groups have told Congress and the Federal Communications Commission they are afraid price cap regulation may lead to a reduction in network service quality. Under price cap rules, which allows carriers to earn higher profits by cutting costs, the RBHCs might delay or suspend maintenance and net upgrades to cut costs, they said.

In response to these concerns, the FCC instituted a requirement that the RBHCs must file quarterly service quality reports with the commission. But major user groups, such as the International Communications Association and the Tele-Communications Association, Inc., have told the FCC that the reporting requirements are not sufficient.

BT to unveil global net unit

continued from page 1

to date, BT has not entered into agreements with any partners, nor has IBM agreed to buy services from the unit.

BT executives believe that formation of the unit will help the company quickly capture market share in what they expect will be a rapidly growing industry.

"They see a narrow window of opportunity," according to an official familiar with BT's plans. "They believe that if you aren't a major player in two to three years, you won't be a player in 10 years. They want to be first to market."

Upcoming announcement

BT plans to announce the new business unit on Sept. 19, sources said. It will be headed by Gerald Thames, formerly vice-president of Telecom*USA, Inc., which was acquired by MCI Communications Corp. last year.

A BT North America, Inc. spokesman in San Jose, Calif., declined to release any details about the venture. But he confirmed that BT is planning an announcement on Sept. 19 relating to global network services.

The new business unit within BT has been called Pathfinder but will likely be announced under another name.

Sources familiar with BT's plans were unable to say when the unit's services would be available. But the venture's global private network is currently up and running and is managed from a BT network management center here.

Multiplexers supporting the unit's network are collocated in BT North America's international value-added network nodes. But the unit's services will be marketed separately from BT North America's services.

The organization has been marketing its services to IBM, but the computer maker has not agreed to buy them, according to sources. An IBM spokesman said the computer maker is considering obtaining new network services from BT in Europe but declined to say more.

To develop a more effective international service, BT is seeking other carriers as partners, including Japan's international and domestic carriers, Kokusai Denshin Denwa Company, Ltd. and Nippon Telegraph and Telephone Corp., as well as Deutsche Bundespost Telekom, Germany's national carrier.

> "They see a narrow window of opportunity," said an official familiar with BT's plans.
>
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Sources predicted the Japanese and German carriers eventually will join the venture. Many analysts also predicted BT will try to buy a U.S. carrier.

A source close to BT said the carrier had briefly discussed buying WilTel, but no action resulted from the talks. A WilTel spokesman would neither confirm nor deny that. He added, however, that the carrier has discussed selling bandwidth to BT.

Market growth

Most analysts agree that a large market will develop over the next decade for global one-stop shopping and outsourcing services. But the market will be very competitive.

For example, both AT&T and MCI have one-stop shopping agreements with foreign carriers, including BT, that enable one carrier to deal with other service providers on a user's behalf. US Sprint Communications Co. and World Communications, Inc. also recently began subleasing end-to-end international private lines to users in Europe.

Previously, the carriers could only provide users with half of an international private line that originated in the U.S. Now the carriers are providing end-to-end private lines by subleasing capacity from global networks they operate in the continent.

Carriers are introducing these services to woo more multinational users.

"Just a year or two ago, multinationals had to run after PTTs to get simple answers and services," said Elke Geising, managing director of Geising International Group, a network consultancy based in Frankfurt, Germany, and New York. "Now there's a total turnaround, and the PTTs want to come to multinationals and offer them everything."

Leonard Elfenbein, president of Lynx Technologies, Inc., a global network consulting firm in Little Falls, N.J., added, "It is a huge emerging market. But the problem is there will be so many people in it."

SunSoft airs pack for nets

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keting for user environments at SunSoft, based here.

Novell, topping the list of vendors pledging support, said it would work to incorporate its NetWare network operating system into the Solaris environment.

This could mean that at some point in the future, workstations and personal computers running Solaris-based applications could become clients in a NetWare local-area network.

Likewise, developers could build Solaris server-based applications that serve DOS, OS/2 or Unix NetWare clients.

Looking ahead

Today, the only Unix support Novell provides inherent in its network operating system is simple file transfers with Sun devices through its NetWare NFS NetWare Loadable Module available with NetWare 3.11. However, Novell said it plans to work with SunSoft to further incorporate Unix into NetWare, perhaps ultimately supporting Unix machines act as native clients in NetWare LANs.

Intel, based in Santa Clara, Calif., said it would work with SunSoft to ensure that Solaris will be optimized to run on its 80386, 80486 and future 80X86 microprocessors. NetFrame Systems, Inc., a superserver maker based in Milpitas, Calif., said it would work to include Solaris with its Intel microprocessor-based superservers, although it would not specify a time frame.

Ashton-Tate said it will update its dBase IV data base management system to support Unix System V Release 4 on which Solaris is based.

Also, Lotus said it would enable its 1-2-3 for Sun SPARC Systems to run in the Solaris environment. Oracle and Sybase said they would ensure that their entire product lines operate in the Solaris environment, while WordPerfect said it would develop products that will run in the Solaris environment.

Some analysts said the Novell support officially signifies the LAN software giant's push into the Unix marketplace, while others said Solaris could pose a threat to the Open Software Foundation's (OSF) Distributed Computing Environment (DCE), which will be generally available later this month.

The OSF's DCE is a networked applications environment similar to Sun's ONC that would let developers create and run distributed applications across different vendors' machines, such as on Unix workstations or DOS- or OS/2-based personal computers.

Although analysts did not say which camp might be the ultimate winner, they agreed that Solaris will give the OSF DCE a run for its money.

SunSoft initially will offer Solaris Version 1.0, based on SunOS 4.4.1, which will only be available to run on SPARC machines. Pricing for Solaris 1.0 ranges from $795 to $1,395.

Solaris 2.0 — the version based on SunOS 5.0 and the version that will run on both SPARC- and Intel-based platforms — will be available in the first half of 1992. Pricing will be announced at that time.

SynOptics touts affordability

continued from page 4

SynOptics' new System 2000 work group concentrators are designed to provide users with FDDI capabilities for small work groups or sites and can be configured to feed traffic into larger hubs over an FDDI backbone.

SynOptics' Model 2912-04 FDDI STP Workgroup Hub will support FDDI over shielded twisted-pair cabling. It will be priced at $15,500, or about $1,100 per port. The Model 2914-04 FDDI Fiber Workgroup Hub will support FDDI over fiber cabling. It will be priced at $23,995, or about $1,700 per port. Both work group hubs will be available in the first quarter of 1992.

The company is upgrading its existing LattisNet Network Management for Unix net management software in order to allow users to manage devices on FDDI, token-ring and Ethernet networks from the same management console.

The integrated network management system, which resides on a Sun Microsystems, Inc. SunNet Manager workstation, communicates with the FDDI network management modules on multiple hubs in order to manage the FDDI networks.

The network management system supports integrated FDDI Station Management as well as Simple Network Management Protocol net management.

The net management software will be priced at $3,995 or at $6,995 with SunNet Manager.

Bill Lanfri, SynOptics' vice-president of marketing, said the FDDI products are designed to give users a smooth, low-cost migration path from existing Ethernet and token-ring nets to FDDI.

"The pricing is pretty damned aggressive," he said. "There is still a reputation that SynOptics is very high priced. That's not true, and we're trying to beat that into the ground as quickly as we can."

According to Lanfri, SynOptics will charge about the same per FDDI port on its System 3000 as Synernetics, Inc. does on its LANplex 5000 hub, one of the few existing competing products. The per-port price on SynOptics' work group hubs is lower than that offered by Timeplex, Inc. and AT&T work group hubs or concentrators, he added.

Although SynOptics has been involved in FDDI standard setting activities in recent years, the new products are its first FDDI offerings.

"Many users don't even need FDDI today, but it's important for vendors to show the Fortune [500] companies an FDDI upgrade path," said Susan Frankle, an analyst at International Data Corp., a Framingham, Mass., market research firm. "SynOptics has done that with this set of products."

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Company to roll out ACD tools

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com product that enables managers to centrally manage ACD networks.

The NAC is based on a Hewlett-Packard Co. Vectra RS/25C personal computer outfitted with NAC software, 8M bytes of main memory, a 155M-byte hard drive and an eight-port concentrator. The concentrator is used to support eight supervisory terminals and several printers.

The NAC polls as many as 10 remote Meridian 1 ACDs every 10 seconds over either dial-up or a 9.6K bit/sec dedicated data link to collect agent, call and trunk statistics.

The NAC's Network Configuration Control (NCC), one of the system's many features, will enable a network manager to adjust the ACD network to respond to changing local traffic conditions, staff changes and networkwide traffic pattern shifts.

The NCC feature, for example, will enable managers to complete such tasks as:

- Changing routing tables in remote ACDs.
- Activating advanced features such as Look Ahead, which enables ACDs to distribute calls to other sites after checking to see if the sites can accommodate the traffic.
- Instructing ACDs to route queued calls to agents with the highest priority, rather than to the first available agent or the one that has been idle longest. Some firms give their top agents highest priority and less experienced agents lower priority.

The NAC can generate 250 different reports that fall into three primary categories — call, agent and trunk reports.

Call reports list the number of calls answered, abandoned and transferred to another site. Agent reports list the amount of time spent on each call, the time spent making outgoing calls and how long each agent is idle. Trunk reports list how many times all trunks were busy, how many calls were abandoned on each trunk and the percentage of time each trunk was totally occupied.

The voice response developer's tool kit announced last week, dubbed Meridian Access tools, will help programmers develop applications that will add a new dimension to ACD's call processing capabilities.

Meridian Access includes an application program interface, a library of subroutines and event handlers written in the C programming language. The interface will simplify the job of building applications capable of letting users interact with computers by detailing the manner in which applications are interfaced to voice processing, voice messaging and selected call processing capabilities of the Meridian 1.

The tool kit also comes with a voice-prompt editor that will help create the appropriate voice prompts to walk callers through a voice response system.

Users that wish to implement Meridian Access interative voice response applications must have a Meridian 1 or Meridian SL-1 PBX running X11 Release 12 or higher switch operating software, Meridian Mail Release 7 software equipped with the Access Enable option and a Motorola, Inc. Delta series workstation.

Lastly, Northern Telecom is expected to exhibit at the TCA show an ACD management product called Meridian MAX that can collect statistics from twice as many agents as the vendor's previous offering.

The products are expected to be available in the fourth quarter.

BT, DEC to link OSI systems

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created some really strange bedfellows," said Tony Viola, network management marketing manager at DEC.

Bruce Murrill, managing director of Unital Systems, Ltd., a consultancy in Ipswich, England, said the BT-DEC announcement is a step in the right direction.

"I think it's pretty positive to see one of the major telecom providers in the world linked up with one of the major computer vendors," said Murrill, who is also technical director of the OSI/Network Management (NM) Forum. "From a user's perspective and the forum's perspective, it's a positive thing."

Users should not plan on employing the link any time soon, however. Keith Miller, BT's product manager for North America, said the software connection is scheduled to ship in the third quarter of next year.

BT's Concert is not shipping yet, and the company does not plan to announce U.S. availability dates until sometime next year. DEC has been shipping the VMS version of DECmcc since November 1990, but the Ultrix version is not scheduled to ship until the first half of 1992. DEC's Viola said the link would work with both versions of DECmcc.

The agreement would let users play off the strengths of both products, he said, with Concert managing mainly the telecommunications part of a network and DECmcc managing the computers and applications. The two would be able to share data for things such as alarm correlation in order to pinpoint the cause of an outage.

BT's Miller said Concert is not limited to managing the firm's telecommunications services, however. It has nearly 30 vendors in its Concert Liaison Group that have pledged to support the product. The members include a number of major T-1 multiplexer vendors, computer vendors such as IBM and Hewlett-Packard Co. and local-area network vendor Ungermann-Bass, Inc.

"Concert could manage entities such as a BT [North America] private network, an [Ungermann-Bass] LAN and other things DECmcc might not be managing now," said Jim McWalters, section manager of net management systems and architecture at BT North America, Inc. here.

At a recent trade show in England, DEC and BT North America demonstrated a link between the two products but did not announce plans to make it commercially available. Another demonstration is scheduled for Telecom '91 in Geneva next month.

Miller said the link will be based on the OSI Common Management Information Protocol and Common Management Information Services protocols, and will use OSI/NM Forum message sets that define how to manipulate a managed object.

AT&T and IBM have pledged to support OSI protocols and said they would initially forge a link based on early implementations of them.

BT would not give a status report on its feasibility study for the Concert-to-NetView link, although McWalters said to expect an announcement on that topic later this month as well as similar agreements with other vendors in the future.

DEC's Viola hinted that DEC is also working on agreements with other companies.

"We continue to talk to traditional competitors and customers as well as our existing collaborators to see if there's any synergy," he said.

Firm to unveil FDDI modules

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the FDCMIM-04 and FDCMIM-08, which will support four and eight additional FDDI links to the hub.

Cabletron will roll out four FDDI interface cards for personal computers and workstations for EISA, AT, Micro Channel Architecture and Sun Microsystems, Inc. Sbus platforms that the company will remarket from Network Peripherals, Inc.

The cards will provide direct FDDI connectivity to the desktop and be managed through Cabletron's Remote Lanview/Windows and Spectrum network management platforms.

William Clark, Cabletron's FDDI product manager, said his company will introduce next summer an FDDI adapter set that will provide shielded and unshielded twisted-pair links from the desktop to an FDDI network.

Cabletron will begin beta-testing the FDDI products in November at the University of New Hampshire, with general availability slated for early next year.

Pricing has not been determined, but Clark said the modules will sell at below $1,000 per port. The network adapter cards will cost between $2,500 and $3,500 each.

NETWORK WORLD

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AT&T favors barring RBHCs

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pears to have been prompted by several recent developments that could cause the collapse of the Modified Final Judgment protections. A federal appeals court is on the verge of lifting the information services ban, and the Senate approved a bill earlier this year that would allow the RBHCs to manufacture telecommunications equipment.

But perhaps most disturbing of all to AT&T is a brief filed by the Department of Justice attempting to demote AT&T's position when disputes arise about changes to the Modified Final Judgment. The agency told a federal appeals court that most of the Modified Final Judgment provisions that applied to AT&T have expired and it does not think AT&T should be given greater deference than any other firm when it opposes changes that are supported by the Justice Department and the RBHCs.

If AT&T's status in Modified Final Judgment proceedings is altered, it could virtually assure that bans on manufacturing and long distance will be removed. If AT&T's objections are not accorded special weight and the RBHCs and the Justice Department both support removing the restrictions, then U.S. District Court Judge Harold Greene would have to use a less stringent legal standard than he has in the past when maintaining the bans.

A federal appeals court forced Greene to use this less stringent legal test on the information services ban since none of the major parties contested that change. Late last month, after a second review, Greene concluded he had no choice but to lift the prohibition. However, he did issue a stay of that order until all appeals are exhausted.

But it is unclear whether AT&T's change of heart has come in time to alter events on the Modified Final Judgment. The American Newspaper Publishers Association has asked for legislation writing the bans into law, and the Information Industry Association, the Consumers Federation of America and the National Association of State Utility Consumer Advocates have all said they would support such a move.

AT&T's Baudhuin said in an interview last week that allowing the RBHCs to provide information services poses the same threats of cross-subsidies and anticompetitive conduct as entry into other areas.

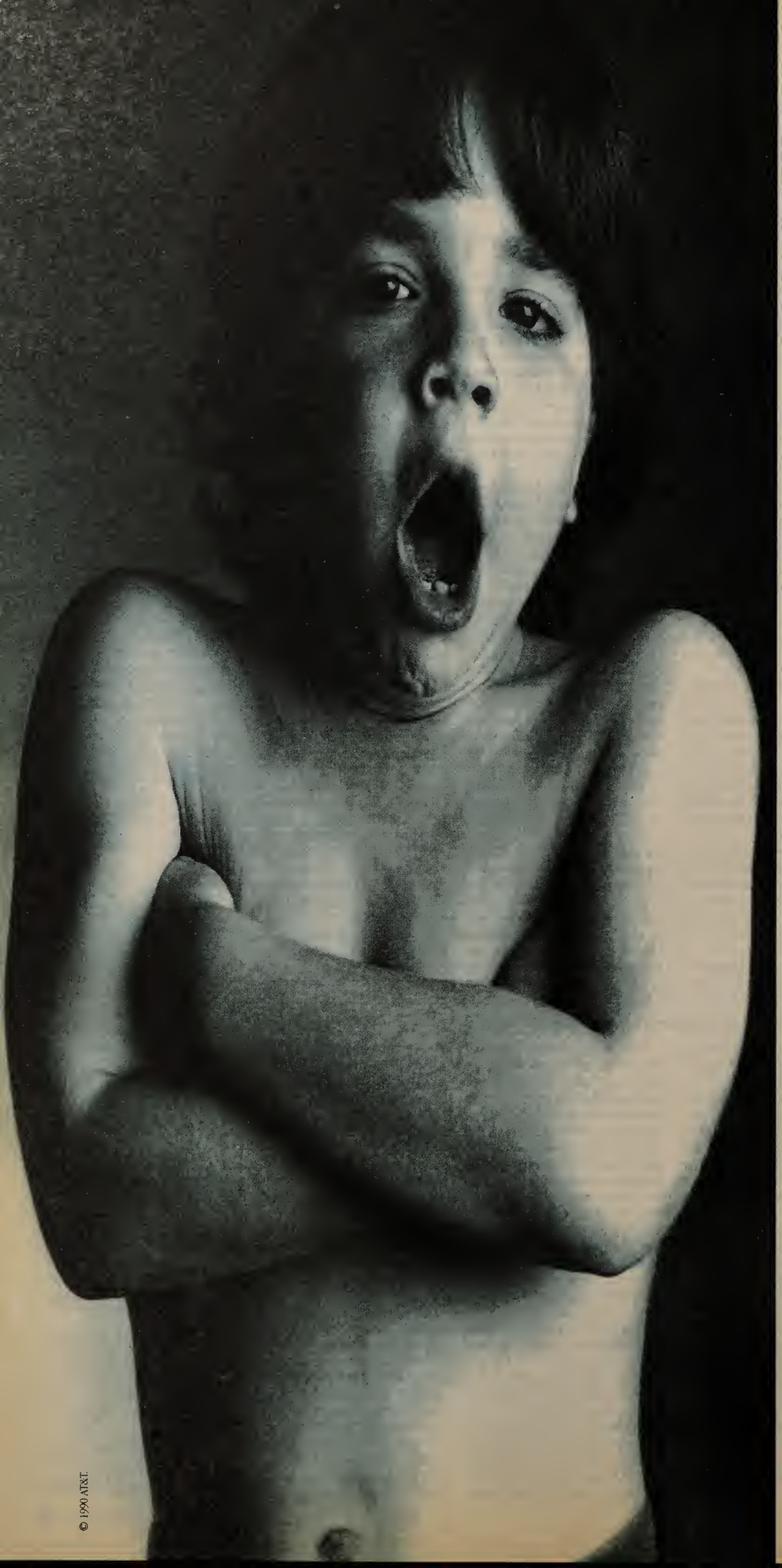
"The underlying principle is precisely the same [for information services]," he said.

However, an AT&T spokesman said he knew of no plans for AT&T to intervene on behalf of parties that have appealed Greene's decision to lift the information services ban.

Baudhuin defends AT&T's previous decision not to oppose lifting the information services ban. "We're not in the information services business," he said. "What we did was try to stick to our knitting, talk about things we understood and leave the conversation on the issue to people who are in that business."

According to Baudhuin, even stringent safeguards would not be sufficient to allow the RBHCs into new markets. He said that under the unified Bell system, AT&T watched every attempt to regulate, rather than break up, the company go sour.

"We tried virtually every regulatory approach before divestiture, [such as] structural separations and procurement practice regulations," Baudhuin said. "We had [the FCC's] Computer I, II and III, but none of those worked. Regulation can't cope with this stuff."



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and how last night he looked at the crescent moon

and said, "Daddy, broken moon, broken moon." And

the moon would be fixed soon by a silent and unseen

the PBX that I bought for the corporation from

company might not be fixed any time soon at all,

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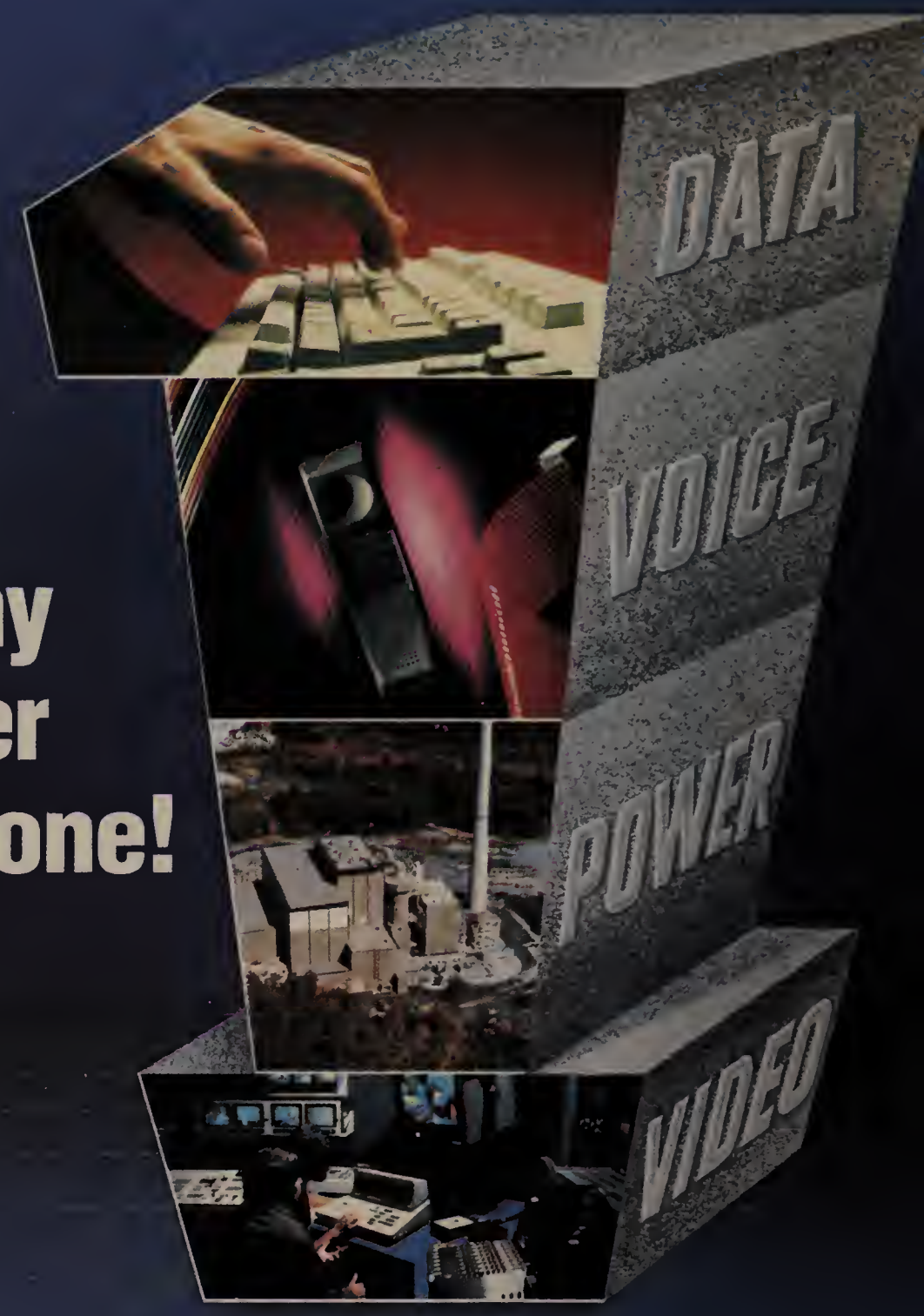

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